University of Alberta

Grave Disturbance at Khuzhir-Nuge XIV, Siberia

by

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Abstract

A common feature of mortuary behaviour at the Bronze Age Serovo-Glazkovo cemetery Khuzhir-Nuge XIV, in Siberia, Russia, is extensive post-interment disturbance of graves. It appears that prehistoric people routinely reopened graves after burial and disturbed the human remains and/or artifacts. Despite the relatively high frequency of grave disturbance in mortuary sites all over the world, there is a striking lack of research and literature dedicated to the subject. This thesis summarizes the results of an analysis of the relationship between grave disturbance and three primary dimensions of mortuary behaviour (grave architecture, skeletal remains, and grave inclusions) at this cemetery. It will be shown how each of the three dimensions displays patterns relating to disturbance activities and offer insight into hunter-gatherer culture and lifestyle.

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Chapter One: Background

1.1 Introduction

Rich archaeological evidence from mortuary and habitation sites in the Lake Baikal region of Siberia confirms that there has been a human presence in the area for approximately 20 000 years (Weber 1994, 1995). A relatively long history of human habitation and good preservation conditions have created an opportunity to explore culture change and continuity among early hunter-gatherers from this region (Weber et al. n.d.). Furthermore, a number of remarkable hunter-gatherer[1] cemeteries have been located in this area (Weber 1995) and new archaeological techniques and methods are helping to reconstruct the lives of these early cultures from materials provided by these sites.

This thesis explores the phenomenon of grave disturbance observed at Khuzhir-Nuge XIV cemetery (hereafter referred to as KN XIV). Despite the commonality of grave disturbance in mortuary sites all over the world, there is a striking lack of research and literature on the subject. Grave disturbance, often referred to as grave robbing or looting, has been looked upon as a barrier to archaeological interpretation. Graves that have been looted or otherwise disturbed are often removed from archaeological analysis (O'Shea 1984; Whittlesey and Reid 2001). As a result, researchers ignore an important secondary source of information about both the people interred in the graves and the ones disturbing them. As work at KN XIV demonstrates, archaeologically significant patterns can be identified within the disturbance context and should not be eliminated from the analysis.

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[1] The term 'hunter-gatherers' is used throughout this thesis and should be understood to include foraging, fishing and other activities typically attributed to similar cultures by archaeologists.

1.2 Environmental Context

Researchers typically divide the Lake Baikal region (Figure 1) into the Trans-Baikal and the Cis-Baikal (Michael 1958; Weber 1995, 2003; Weber *et al.* 2002). The Trans-Baikal extends over the area south and east of the lake, while the Cis-Baikal is located northwest of the lake. The Cis-Baikal is located between 52° and 58° north latitude and 101° and 110° east longitude and includes the Angara River Valley (the lake's only large outlet), the upper section of the Lena River Valley (as far as the town of Kirensk), the western shore of the lake, and Ol'khon Island. Mountains line the lake and form the Baikal Mountain Region. Within the Cis-Baikal the Primorskii and Baikalskii Mountain Ranges run parallel to the lake on the west side, with the Baikalskii Range situated just north of the Primorskii Range.

The Cis-Baikal is situated within the middle and southern boreal forest (taiga) and is predominantly covered by birch and conifers. Summers are short and hot with June temperatures averaging 20° C. Conversely, winters are long and cold averaging –26° C in January. Irkutsk, the region's largest city, averages 2100 hours of sunshine per year and a growing period that stretches from mid-May to late September (Weber 2003). The area surrounding the lake and the Upper Angara river valley is not affected by permafrost, but during winter the ground freezes to a depth of between 120 and 220 cm (Weber 1995). The majority of precipitation falls during the growing season and averages 400–600 mm annually (Weber 2003).

In addition, the Cis-Baikal provides many forms of nutrients for the people in the region, both today and in the past. Potential plant food sources are berries, mushrooms, and nuts. Important terrestrial animal species found in the area include elk (*Alces alces* Linné), red deer (*Cervus elaphus* Linné), roe deer (*Capreolus capreolus pygargus* Pallas), musk deer (*Moschus moschiferus* Linné), and reindeer (*Rangifer tarandus* Linné). Lastly, aquatic resources include numerous species of fish and the Baikal seal (*Phoca sibirica* Gmelin) (Weber 2003).

1.3 Literature Review

Archaeological interest in the Cis-Baikal dates back to the times of Peter the Great at the beginning of the 18th century (Michael 1958). From that time until the late 1800s archaeological work in the region was predominantly undertaken by amateur historians and collectors (Michael 1958). Notable early excavations include the Kitoi mortuary site by Vitkovskii in the 1880s and Petri's work at Ulan-Khada in the early 1900s (Weber 1995). The first scholar to complete a comprehensive archaeological analysis of the Neolithic and Bronze Age in this region was Aleksei Pavlovich Okladnikov (1908 – 1981). For many years Okladnikov was the pre-eminent archaeologist in the area, becoming the accepted authority on the culture history of the region's cultural groups. Here I briefly review Okladnikov's culture history for the region based on English translations (Okladnikov 1959; Okladnikov and Konopatsky 1974-1975; and Michael 1958) and subsequent interpretations of his research (Chard 1974, Weber 1994 and 1995).

Okladnikov divided the Lake Baikal Neolithic and Early Bronze Age cultures into a four stage unilinear cultural evolution: Isakovo, Serovo, Kitoi, and Glazkovo (Okladnikov 1959; Chard 1974; Michael 1958). Each stage was defined according to mortuary ritual, artifact assemblages, perceived types of subsistence, social organization, and technology and his model for the culture history in the Lake Baikal region was based on data from approximately 270 Neolithic and Early Bronze Age graves. Okladnikov believed that there were too few habitation sites in the area, and those that were present could not offer enough information to create a valid culture history model. Therefore, the ample mortuary data were a much better source to design an accurate picture of these early cultural groups.

According to Okladnikov, the Isakovo mortuary ritual consisted of placing the dead in an extended supine position in grave pits filled with limestone slabs. The pits were usually oriented perpendicular to a nearby river. Their mortuary assemblage typically consisted of the bones of terrestrial animals (elk, deer, and beaver), bone points and needles, and slate and nephrite tools such as knives, scrapers, and awls. Ceramics were present in the graves and there was evidence of people possibly decorating themselves and/or their dead, with antler beads and wild boar tusks. It was believed that Isakovo subsistence activities focused on hunting over fishing due to the prevalence of hunting artifacts and lack of fishing implements (Weber 1995).

In contrast, Okladnikov (1959:12) considered the Serovo culture to be more technologically advanced than the "archaic" Isakovo culture group. The mortuary ritual of the Serovo was notable for its uniformity in artifacts, grave orientation, and body position within the graves. Okladnikov believed that the Serovo pottery was more intricate in style and form compared to the Isakovo ceramics and their hunting weapons appeared somewhat superior. Although the burial assemblages demonstrated increased complexity in material remains over the Isakovo assemblages, there did not appear to be any distinguishing status differences between the Serovo graves.

Therefore, both the Isakovo and Serovo were seen to represent relatively egalitarian cultures.

The Kitoi were believed to succeed the Serovo and their mortuary ritual involved placing the dead in pits in an extended supine position. However, these pits were generally excavated deeper into the ground than the Serovo pits and the geographic orientation was found to vary. In addition, there was a notable increase in the frequency of graves with multiple interments. The Kitoi are also characterized by red ochre in their burials, composite fish hooks (indicating increased reliance on fishing), and an abundance of green nephrite artifacts (Okladnikov 1959; Michael 1958). It was believed that artifact assemblage disproportions between Kitoi burials suggest social status inequalities and a shift from a matriarchal to a patriarchal society.

All of the three aforementioned groups fall within the Neolithic period, but the last group, Glazkovo, fits in the Bronze Age (Okladnikov 1959). Their mortuary practices involved placing the dead in an extended supine position within the pits and then covering them with paving stones. Graves were typically oriented parallel to the nearest body of water (river or lake). Objects recovered from their graves include copper or bronze artifacts (although these are rare), straight base arrowheads, green nephrite adzes, white nephrite rings and discs, and leaf shaped knives (Okladnikov 1959). There seemed to be less emphasis on fishing in the Glazkovo cultural group compared to the Kitoi but greater than in the Isakovo and Serovo.

Lastly, Okladnikov noted a disproportion in grave goods among the Glazkovo burials, in that some individual burials had 'wealthier' assemblages than other burials and there were artifact differences between the sexes. Okladnikov believed that inequalities between assemblages were associated with a transition from a matriarchal to a patriarchal society and the introduction of slavery (Okladnikov 1959).

1.4 Recent Developments

As mentioned, Okladnikov's culture history model became the established authority for this region's prehistory for almost fifty years. There were a number of scholars within the Soviet Union who challenged his chronology, namely M.M. Gerasimov, L.P. Khlobystin, and V.V. Svinin, but for the most part the model withstood all criticism. With the disintegration of the U.S.S.R. researchers outside the republic had the opportunity to review and reinterpret Okladnikov's analysis of the archaeological evidence from the Baikal region (Weber 1994, 1995).

Okladnikov's focus on cemeteries and mortuary behaviour was appropriate and it is important to note that he was one of the first scholars in the world to analyze mortuary variables to gain insight into the lives of ancient peoples. Since that time numerous Western scholars (e.g. Brown 1971; Chapman and Randsborg 1981; Cannon 1989, 2002; Goldstein 1981; O'Shea 1984; Parker Pearson 1999; Tainter 1978) have demonstrated how mortuary analyses can offer important information about past peoples' way of life, socioeconomic organization, and worldview.

New excavations and a modern analysis of excavated material utilizing the latest archaeological techniques and theoretical perspectives have led to challenges and amendments to Okladnikov's conclusions. Most importantly, radiocarbon dates offered critical data and helped to clarify the order of events in the region. Weber (1995) has created a new comprehensive model that combines information from past research including the artifact assemblages, mortuary treatment, and radiocarbon dating. This new chronological model asserts that there were three groups inhabiting this region in succession: Kitoi, Serovo (which included the old category of Isakovo), and Glazkovo (Weber 1994, 1995). Weber's model includes a cultural hiatus between the Kitoi and Serovo groups lasting about 700–1000 years (Figure 2).

Weber and his colleagues not only challenged Okladnikov's chronology and classification system, they also questioned some of his basic tenets about the various culture groups. Using material from the already excavated cemeteries of Ust-Ida and Lokomotiv, Weber *et al.* (2002) demonstrated the main differences between the Kitoi and the Serovo-Glazkovo[2] using the results from faunal analyses, stable isotope, and human osteological studies in addition to the mortuary and artifact information.

Regarding the Kitoi culture, Weber *et al.* (2002) agreed with a number of Okladnikov's conventional diagnostic descriptors such as extensive use of red ochre to cover the dead, deep grave pits, and distinctive grave goods such as composite fishhooks. However, their research further clarified the Kitoi cultural characteristics. They demonstrated that the Kitoi likely inhabited small annual ranges, engaging in frequent and short residential moves. Subsistence was focused on a select group of species consisting of fish and some ungulates. Lastly, there seemed to be sexual differences in resource consumption, in that, adult males may have had better access to food resources than children, women and older people (Weber 1995; Weber *et al.* 2002).

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[2] In this study the researchers combined the Serovo and Glazkovo groups in order to focus on the differences between the pre- and post-hiatus cultures and because there are still questions whether the Serovo are significantly different from the Glazkovo (Weber *et al.* 2002).

Conversely, Weber and his colleagues suggest that the Serovo-Glazkovo had a larger regional population that was more equally spread over the entire area. Although the individual groups were smaller than the Kitoi, there was additional interaction between groups. Furthermore, it was demonstrated how the Serovo-Glazkovo moved more often and when they did move they tended to range over a larger territory. The Serovo-Glazkovo diet did not rely on fish as much as the Kitoi and included intensification in the hunting of ungulates, seal, and collecting plants. This broader diet and increase in annual range, gave the Serovo-Glazkovo access to diverse food resources and a healthier standard of living. Lastly, Serovo-Glazkovo sex and age relations appeared to be more equitable than within the Kitoi culture (Weber *et al.* 2002).

This elucidation of the culture history of the Neolithic and Early Bronze Age has greatly improved our understanding of the people of this region. It is interesting to note that there appear to be two, possibly three, different cultural groups inhabiting the same region but apparently utilizing the landscape in different ways through time.

Chapter Two: Overview of the Phenomena of Grave Disturbances

2.1 Social Memory Sites

Humans use a variety of means and places to maintain and reinforce an individual's personal and social identity. Modern examples of places such as these include churches, temples, monuments, museums, and government buildings. As Cattell and Climo (2002:18) point out; these sites "are important for social and cultural continuity within ethnic, religious, national, and other groups, and across generations, occupational categories, and other identities."

Ancient hunter-gatherers would have had venues similar in principle but not as elaborate that provided the same opportunity to reinforce their social memory and identity (Driver 1999). These sites or structures may include, but are not limited to, sacred places in the landscape (trees, caves, mountains, bodies of water), constructed places (pictograph sites, standing stones) and, of course, mortuary sites such as cemeteries.

A cemetery transcends the temporal constraints of personal attachment to the dead. Cannon (2002: 194) states: "cemeteries become visible expressions of the stability and identity of the community, which are further enhanced by spatial proximity or visual prominence." A cemetery, such as KN XIV, that is used for hundreds of years becomes a key location on the landscape to venerate ancestors and hold rituals and processions that honour the dead but, more importantly, reaffirm the social memory and cohesiveness of the living.

2.2 Grave Disturbance in Overview

Mortuary facilities, such as graves in a cemetery, are sometimes re-opened (disturbed) after interment. In general, people disturb graves for three different purposes; *economic*, *political*, and *ritualistic*. However, the vast majority of grave disturbances are motivated by economic reasons (Bahn 1996) and repeatedly fall under the rubric of "looting."

Looters are predisposed to focus their attention on grave goods that are deemed to be valuable, such as gems or precious metals, often ignoring the remainder of the grave content. Many of the most famous examples of economic grave disturbance occurred at the pyramids in Egypt. Weinstein (1984: 591) comments on the commonality of thievery in the Theban necropolis in late Dynasty XX.

> Royal and private tombs as well as temples were violated in the search for gold, silver, copper, semi-precious stones and other valuables. Rarely methodical in their work, the robbers frequently ignored or disposed of anything that was not easily portable; mummies were often stripped of their valuables and the coffins then set afire or left out in the desert.

The reward gained from this disturbance is obvious. Gold, jewels, and other precious material contained in the graves could be sold or traded for any number of products thus increasing an individual's personal wealth.

Economic disturbance is not limited to the mortuary facilities of large, complex societies such as the Theban dynasty. Hunter-gatherer graves are looted as well (Schulting 1995). Oleni'ostrov is a Mesolithic hunter-gatherer cemetery located on an island in Northwest Russia. The remains from 177 individuals have been recovered from 141 graves, although it was thought that at one time there were roughly 500 graves on the island (Jacobs 1995). In his discussion of the cemetery

Jacobs (1995), notes that Oleni'ostrov was known to the locals in historic times as an "island of the dead" and that a number of the graves had been looted for their artifacts.

The second major category of disturbance can best be described as political. This type of disturbance, often labelled desecration, is not restricted to mortuary sites and is common to all places where people gather to maintain social memory. Disturbance activities range from the work of individuals or small groups to large ethnic or political factions purposefully destroying sites in order to marginalize others. "Historical monuments and archaeological remains are powerful carriers of messages and, by their own nature as material culture, they are actively used by social actors to produce meaning, particularly in materializing concepts like national identity and ethnic difference" (Funari 2001: 94). Desecration of a social site, such as a monument, serves to deny the legitimacy of such a place and limit access, not only to individuals, but the collection of people that are associated symbolically and physically with the site.

Rao and Reddy (2001) use the dispute that occurred in the northern Indian town of Ayodhya to illustrate what can happen when a social memory site is desecrated, or in this case entirely destroyed. During the late 1980s and early 1990s violence between Hindu and Moslem people was rising throughout India. In December 1992 a large group of Hindu fundamentalists destroyed a 450-year-old Moslem mosque called the Babri Masjid. The Hindus believed that Rama, a Hindu hero-king, was born on this site. Furthermore, they maintained that Moslems had demolished an original Hindu temple placed there in order to build the Babri Masjid.

After the destruction of the temple riots broke out throughout the country and, as a result, approximately 1000 people died. The attack on the mosque was not simply the destruction of a building. It was the violent obliteration of a place of worship, a place where Moslems could celebrate their ethnic and social identity (Rao and Reddy 2001).

Olsen (2001: 43) notes that:

> Monuments and pre-historic remains transcended their own physical identity to embrace emotions and memories. They embodied collective experiences and stability, and constituted something immortal contrasting with the transitory and perishable identity of the individual. Transcending their own historical locations, the relics of the past created the link of memory between past and present.

Destroying the Babri Masjid served as an opportunity to denigrate the emotions, memories, collective experiences, stability and social identity of the people who worshipped at the temple.

Political disturbance or desecration is often directed at cemeteries. Tombstones are broken and pushed over, graves are opened, and human remains are pulled from their coffins. Sometimes this type of grave disturbance can be attributed to simple morbid curiosity by teenagers (Ashbridge 2005) however; it is common for graves to be violated because of ethnic tensions, intolerance, and hatred.

Political desecration is typically random and destructive in form although it can be targeted at a particular group within a cemetery. For example, Jewish graves and cemeteries are frequently violated by various right-wing racist groups (Berger 1999). In 1990, Newsweek magazine reported that a number of graves had been disturbed in Carpentras Jewish Cemetery, France. "Thirty-four graves lay desecrated….their marble headstones shattered, the tombstones wrenched aside. The body of an elderly woman had been half-dragged from the ground. Sprawled nearby was the cadaver of an 81-year-old man buried just two weeks earlier—mutilated and impaled through the rectum with a parasol." The magazine article goes on to note how these atrocities "shocked France's 650,000-strong Jewish community and appalled the country."

As Francis *et al.* (2002: 95) point out; cemeteries "encode, reproduce, and initiate constructions of memory at individual, familial, and collective levels." The desecration of the individual graves at the Carpentras cemetery was clearly very distressing to the families related to the people interred there, but it is important to emphasize that the grave disturbances were also an attack on the entire Jewish community. As with the destruction of the Babri Masjid temple the desecration of the graves defiles and pollutes a sacred social memory site. It sends a strong message, designed to encourage revulsion and fear throughout the Jewish people of France.

Furthermore, notwithstanding the fact that the graves were targeted according to their ethnicity, the method of disturbance was random in nature. The graves were not selected for disturbance based on common mortuary variables such as sex, age, or length of time after interment. Nor were the disturbers following a prescribed method of desecration for each grave. Therefore, the result of the grave desecration was relatively chaotic and disordered.

Ritualistic grave disturbance, in contrast, manifests itself differently because desecration of the grave or the removal of grave goods is not the primary objective of the grave disturbers. This type of grave disturbance often involves fulfilling obligations to the dead (and the living society) through secondary ceremonies that occur after the deceased have been placed in the grave.

In his analysis of the evidence from the Middle Pre-Pottery Neolithic cultures (MPPNB) from the Levant region of the Mediterranean, Ian Kuijt explores the phenomenon of post-depositional removal of heads (Kuijt 2001). The mortuary practice in this region involved excavating a grave close to the residential structure, placing the dead body in the grave, filling it with sediment and marking the location of the head on the white plaster floor with red paint, and then allowing the flesh to decompose. Once enough time had passed for decomposition some of the burials were reexcavated. Skulls from these particular graves were used for rituals and eventually reburied by themselves or in groups both within and outside residential structures. Lastly, some of the reexcavated skulls were selected to be painted, plastered, and then made into ritual masks.

Kuijt (2001:89) "envision(s) secondary mortuary practices in MPPNB communities as reflecting two interrelated, yet clearly distinct, social dimensions: (1) the recognition of the individuality of the deceased and (2) the idealization of links between the living, the deceased, and the collective ancestors." The dual purpose of these practices serves to focus attention not only on the dead but to create a form and a space for ancestor worship. The creation of this special place to venerate the ancestors further serves to strengthen the social connections within the community.

It is important to stress that mortuary disturbance practices provide additional information about the society that is committing the disturbances as well as the people interred in the graves. When graves are disturbed for economic reasons there is a re-distribution of wealth occurring. Therefore, there is likely an inequality of access to material resources within the society disturbing the graves otherwise there would be no need or benefit of looting them. Furthermore, economic grave disturbances usually, but not always, occur many years after the graves were initially constructed. Whether it is peasants looting ancient graves in Peru, local villagers robbing the dead at Oleni'ostrov, or pothunters on the Northwest Coast of North America there is typically a temporal and cultural disconnect between the looters and the individuals within the disturbed graves.

Political grave disturbance also provides insightful details about the group committing the disturbance/desecration. As mentioned, this type of disturbance is frequently associated with inter-group tensions and is used to desecrate the remains of individuals, the sacred mortuary site, and the social memory and identity of the living. This form of grave disturbance is often brutal and upsetting, as seen in the examples above. An analysis of the effects of political grave disturbance in these contexts can highlight differences, whether they are political, ethnic, and/or religious between different groups of people.

The results of ritualistic grave disturbance are different from economic and political disturbance in that, in the majority of ritualistic disturbance cases, the people disturbing the graves know the individuals interred within them. The disturbance activities are usually ceremonial and follow a prescribed method and timeline. Graves are systematically dismantled in order to venerate the ancestors or perform important secondary mortuary rituals. The benefit to the people disturbing the graves is not to gain wealth or to denigrate another group of people but to strengthen the social cohesiveness of their people and complete social obligations to the dead.

It is important to emphasize that it is not always obvious whether the motivations for opening the graves were economic, political, or ritualistic in nature. Historical and ethnographic examples illustrate that grave disturbance is often a complicated phenomenon that may involve two or even three different objectives. For example, the individuals who disturbed the Jewish graves in Carpentras cemetery (see above) could just as easily have been removing items of value at the same time as they were destroying the tombstones and desecrating the bodies thus making an important political statement in a symbolic manner.

The situation becomes even more complicated in archaeological contexts where we do not have access to the range of information typically available in historical and ethnographic circumstances. For instance, archaeological evidence of missing heads from a disturbed grave is often interpreted as desecration in the form of trophy taking (de Laguna 1933: 35), and in many cases it is. However, the removal of heads has also been associated with secondary mortuary rituals and ancestor worship rather than desecration (Parker Pearson 1999). Archaeologists find themselves at a significant disadvantage without the additional contextual data to explain the reasoning behind the grave disturbance.

Considering the potential difficulty in determining the motivation of grave disturbance, it is useful to note that scholars in Russia tend to believe that disturbed graves in the Cis-Baikal region were opened in order to remove items of value such as copper and bronze artifacts (e.g., Kharinsky and Sosnovskaya 2000, Okladnikov and Konopatsky 1974/75). Graves opened after interment are typically referred to as *grablennye mogily,* which translates as "looted graves." This expression implies that graves are being robbed mainly for economic purposes that will benefit the people opening the graves without actually demonstrating this through a systematic analysis. In this thesis, I have chosen to approach the analysis of grave disturbance without such assumptions. Consequently, I avoid the term *looting* unless I am referring to a specific situation that involves people receiving economic recompense from opening a grave. Instead, I use the more neutral term of *disturbed graves* which is not loaded with such implications.

2.3 Grave Disturbance and Archaeology

Grave evidence, or category of treatment, offers indispensable insight into past and present cultures. "Category of treatment refers to observed variation in such features as handling of the corpse, place(s) of burial or disposal (if any), kinds and quantities of grave goods, nature of the grave, and markers and monuments" (Schiffer 1987:85). Comparing and understanding the category of treatment in different graves can help to define and identify variables such as age, sex, diet, health, socio-economic and status differences, and worldviews within the group (O'Shea 1984).

Once a grave has been disturbed and the grave material has been tampered with the category of treatment has changed. When the category of treatment has been compromised, and the disturbed graves are not properly identified and interpreted, the analysis has the potential to become flawed. Unfortunately, this often leads archaeologists into discarding the disturbed graves from their study. The reasoning for this is understandable, and to some degree reasonable, in that a disturbed grave may not represent the same structure or artifact assemblage as it did at the time of burial.

Repeatedly we see archaeological descriptions that mention the disturbance and then reject the disturbed graves and data associated with them. "Vandalized and prehistorically disturbed inhumations were excluded from the quantitative sample because it was not possible to ascertain the numbers or types of burial accompaniments that were originally present" (Loendorf 2001:132).

Questions arise about the exclusion of disturbed graves that might be possible to answer if they were included in a separate analysis. How were the graves opened? Who opened them? When were they opened? Were the graves opened for economic, political, or ritualistic reasons? Is it wealth, power, societal obligations, or something else that is being re-distributed by disturbing the graves?

It has already been discussed how determining the method and objectives of the grave disturbers can offer important information about the individuals interred in the graves and the people disturbing them. If the graves are being disturbed today that tells us about our own present and the sociocultural environment that would generate such an activity. If, however, the people that are building the graves are also disturbing them, a comprehensive mortuary analysis of both the initial and secondary mortuary events will provide two sets of information about one group of people and thus offer greater insight into that society.

Goldstein has noted the lack of this type of analysis in the American Southwest.

> I find it interesting that a number of authors are concerned by disturbances of mortuary contexts. There are always questions of data quality, but one of the most interesting things about mortuary practices in this region is the *quantity* of ancient disturbances. Such disturbances are not surprising given disposal in occupation contexts, but such disturbances may be worthy of study on their own and may be beneficial in learning about the nature of mortuary ritual. Why are people disturbing earlier graves? Is there any regularity or pattering in how the graves are disturbed, or which graves are disturbed? (Goldstein 2001:251)

It will be demonstrated that the disturbed graves at KN XIV do exhibit patterning. These patterns are archaeologically significant and provide additional insights into the activities of past people in the Lake Baikal region.

Chapter Three: Approach

3.1 Materials

This project focused on three primary dimensions of mortuary evidence from KN XIV; grave architecture, skeletal remains, and grave inclusions. Materials were analyzed and methods were developed to analyze these three dimensions in order to elucidate patterns in the disturbance data.

The Little Sea region, positioned between Ol'khon Island and the northwestern coast of the lake, is rich in both habitation and mortuary sites (Figure 1) (Goriunova 2003; Weber 1995). KN XIV is located on the western shore of the Little Sea area. The cemetery is situated 15 to 30 m above lake level on a south-facing slope. It was composed of 79 graves[3] containing 89 individuals (Figure 3). The graves were placed between two bedrock ridges that run lengthwise across the slope and effectively border the North and South sides of the cemetery. The cemetery is approximately 250 m long (east–west) and the ridges that border the cemetery are separated from each other by 70 m in the west and 150 m in the east (north–south).

One grave (G 7) was identified as belonging to the Serovo culture due to its north–south orientation and therefore has been excluded from this analysis. A Russian team excavated Graves 1 through 5 in 1992 but there is not enough information to compare them to the other graves. Therefore, they were also excluded. The other 73 graves (containing 83 individuals) were oriented east–west parallel to the shore of the lake. The graves at KN XIV were constructed from three major physical components:

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[3] Throughout the thesis the term 'grave' (G) refers to the architectural structure containing the remains while 'burial' (B) is used to refer to the skeletal and dental remains of the interment.

the grave pit, grave stones, and the sediment. The dead were placed in the pit, usually in an extended supine position. The grave pits were relatively shallow reaching an average depth of 0.44 m from the modern surface. Pit lengths ranged from 0.95 to 3.10 m with an average length of 2.00 m. The width of the pits ranged from 0.4 to 0.9 m with an average width of 0.6 m (Table 1). Then sediment, most likely in the form of back fill, and schist paving stones (gathered from the local bedrock outcroppings) were deposited on top of the body.

Each grave's surface structure became clearly visible once the sod was removed. These structures were the result of the grave cairns settling over time. The majority of the surface structures had an elongated oval shape that, like the grave pits, were oriented east–west. They ranged in size from 1.90 by 1.00 m to 7.40 by 6.40 m, with an average size of 4.65 by 3.10 m. The mean size of all stones used in grave construction at KN XIV was 24 by 14 cm and there was an average of 239 stones per grave (Table 1). In order to estimate the stone volume for each grave, associated stones were piled together after excavation (Figure 4). Measurements of the length, width, and height of the stone volumes were calculated in the lab using photographic documentation (1997–1998). While the rest of the stone volume dimensions were measured in the field (1999– 2001). Cairn volume estimates range from 0.25 to 3.15 m³ with an average volume of 1.14 m³. A number of graves were missing relevant stone volume data so they were excluded from the volume analysis (G 10, 12, 30, 32, 33).

3.2 Methods

3.2.1 Architecture

Extensive documentation of all the characteristics that make up the grave's architecture at KN XIV was recorded in the field. All illustrations followed the standard protocol for mortuary archaeology in the Cis-Baikal. Drawings of the grave facility remnants and the skeletal remains were at 1:20 scale for every excavation level and 1:10 or 1:1 scale for important archaeological details. Floor plans, the photographic evidence, and the field notes were all used to analyze variables such as stone length, width, frequency, and volume.

This research on the effects of disturbance on the physical remnants of the grave architecture incorporates some of the methods used by B. Drouin to complete his MA thesis (2005). The goals of Drouin's project were to identify patterns within the grave architecture at KN XIV through space and time and attempt to correlate these patterns with the Glazkovo social system (Drouin, 2005). He compiled information on 55 (76%) of the graves from KN XIV but refrained from analyzing the final 17 (24%) of the graves because they had been designated too disturbed for his analysis. I then compiled the information on the disturbed features utilizing the same technique he used to assemble his data. It should be noted that Drouin eliminated Grave 32 and Grave 16 from his analysis because the floor plans were photocopied improperly, so they are excluded from this analysis as well.

3.2.2 Human Skeletal Remains

At KN-XIV there were 74 graves that held 1 individual, 6 graves that contained 2 individuals, and 2 graves that held 3 individuals. Of the 83 individuals recovered from the graves 18 were identified as males, 3 females, 9 *probable* males and 2 *probable* females. Sex could not be determined for the remaining 51 burials because of lack of skeletal material, poor preservation, and/or they were too young to display sex determining characteristics (Lieverse n.d.).

The majority of the interments were located in an extended-supine position, with their heads in the west end of the grave and their feet in the east. The body position of the remaining burials could not be determined because of a lack of skeletal elements and disarticulation. It should be noted that the individuals at KN XIV ranged in degree of completeness and articulation; some of the individuals were in anatomical position and retained the majority of their skeletal elements while others were very disarticulated, fragmented, and incomplete. Furthermore, a number of burials had been in close proximity to fire at some point and some of their skeletal elements were highly charred.

In order to analyze the effects of cultural disturbance on the skeletal remains at KN XIV I utilized the burial photos taken at the time of excavation and the extensive taphonomic and osteological information compiled by Lieverse (1999, n.d.) (Table 2).

3.2.3 Grave Inclusions

My analysis of the grave inclusions from KN XIV is based on the comprehensive classification system prepared by M^{c}Kenzie (2006) at the University of Alberta. His typology follows the model designed by Binford (1962) and O'Shea (1984) in that it divides the grave goods into four major categories based on their perceived 'function': *implement*, *ornament*, *raw material/debitage* and *unworked animal product*.

In total, 6125 artifacts were recovered from the cemetery (Table 3). The greatest number of objects recovered, 5348 (87.3%) fall under the broad category of *ornamental* artifacts, however it should be noted that 5171 of the items in this category are kaolinite beads. In addition, there were 278 *implements* (4.5%), 341 (5.6%) *pottery fragments*, 99 (1.6%) *unworked animal products*, and 59 (1.0%) *raw material/debitage* objects found at the cemetery.

Much of the pottery found at KN XIV was recovered on the surface or from the upper excavation levels and was, therefore, probably not placed within the graves at the time of interment. However, the pottery could certainly have been associated with the initial mortuary ritual or secondary ceremonies, including episodes of disturbance, when people revisited the site. Therefore, the pottery has been included in this analysis. Furthermore, it should be noted that many of the pottery fragments would have come from the same vessel, however this analysis was conducted before the vessels could be reconstructed therefore they are analyzed separately as fragments.

It is necessary to comment on the location of the artifacts in relation to the human remains. During excavation the provenience of each artifact was meticulously recorded (Weber and Goriunova n.d.). Occasionally an artifact was recovered from the upper excavation levels or the surface above the grave. It is feasible that an artifact was initially associated with an individual and then displaced by an event such as disturbance. Conversely, that same artifact may have actually been deposited in the grave during disturbance activities. In order to address this issue I separated the artifacts into two categories: those that were deemed to be *associated* with a particular burial and those artifacts that were *not-associated* with an individual (but were still spatially connected to a specific grave).

Lastly, some archaeologists, Schulting (1995) and McGuire (1992), create elaborate systems, which attribute levels of relative value to artifacts within the assemblage. Due to a lack of ethnohistoric information about the Glazkovo people I have purposefully not assigned a specific rank to the various grave goods recovered from KN XIV. That said, I do recognize that a number of the collected grave goods were probably more 'valuable' than others because they originated from a remote source; were made from a rare material; and/or indicate a greater investment of energy during production. Therefore, I do discuss the relative 'richness' of the various burials in order to highlight patterns or discrepancies in the assemblages between the various grave features.

3.2.4 Quantitative Methods

Quantitative analyses are used to identify patterns in archaeological data, to evaluate the size and strength of those patterns, and to determine the significance of those patterns (Shennan 1988). In this analysis many of the mortuary variables discussed have sample sizes that are too small to run statistical tests of significance. For example, there was only one female located in a disturbed grave at KN XIV, which may indicate that females were not being targeted for disturbance. However, a closer inspection reveals that of all 83 individuals recovered from the cemetery, only 5 could be identified as female. Therefore, the conclusion that females were not being disturbed is a tentative one at best. Throughout the thesis I present the raw numbers and percentages from the various lines of mortuary data in order to discuss and explain the various patterns in evidence.

In the few cases where the sample size is large enough to run statistical tests the patterns are typically very obvious and further testing would, most likely, be redundant or any subtle differences that are quantitatively significant are, in most cases, not culturally significant.

Chapter Four: Condition of Grave Architecture and Skeletal Remains

4.1 Grave Architecture

One of the primary goals in examining the grave facility in greater detail is to determine patterns that can, in turn, provide information about past events and people. In this case the event is grave disturbance and the people are the individuals interred in the graves, and, more importantly, the people that re-opened the graves. As mentioned, grave architecture data were collected from KN XIV and then the form and degree of disturbance affecting the physical remains of the surface structure and grave pit stone structure was ascertained. A number of significant grave architecture patterns were identified and are described in the next section.

4.1.1 Natural Transformation Processes

It is important to explore alternative explanations for disturbance patterns before attributing this activity to people. As mentioned, Drouin (2005) examined the grave architecture at KN XIV in detail. Through the course of his research, he considered a number of environmental processes that could have altered the grave architecture at the site over time. In particular, he examined four major natural formation processes that may have been potentially responsible for the disturbance patterns evident in a number of graves: bioturbation, gravity, tectonic activity, and cryoturbation.

Bioturbation, the effects of living organisms on a site, includes both floral and faunal processes (Rapp and Hill 1998; Wood and Johnson 1978). There may have been some root action affecting the graves, however the effects would be minimal due to the fact that there are no large trees in the region, both today and, most likely, in the past (Weber *et al.* 2002). Regarding faunal processes, cairn burials would protect the human remains from damage attributable to larger carnivorous animals but it would not protect the remains from the effects of small animals (Wilke 1978). There are a number of burrowing animals such as gophers, rabbits, foxes, ants, and worms in the Cis-Baikal Region and any or all of these animals could have penetrated the graves at KN XIV. In particular, *Citelius parryi*, normally called ground squirrels or susliks, are common in the area around the cemetery and likely would have caused some disruption to the grave architecture (personal observation).

Gravity and tectonic activity would both have contributed to the breakdown of the grave cairns. However, these processes would not create large circular openings in the surface structure nor would they affect one region of the cemetery differently than others (see below). Cryoturbation has the potential to disrupt the grave architecture at KN XIV but it is absent in this immediate climatic region.

Overall, it is quite likely that small burrowing animal activity did lightly affect the architecture in a number of graves at KN XIV but none of these four processes would have created the prominent grave disturbance patterns in the architecture outlined in the next section.

4.1.2 Grave Surface Structure

In order to analyze the various patterns of architecture disturbance at KN XIV appropriately it is useful to briefly outline the characteristics of the non-disturbed surface structures. These structures tended to display a relatively consistent pattern with regard to stone size, shape, placement and distribution (e.g., G 33, 43, 51, 58, 60, 64, 68). The term consistent implies that these variables were uniform throughout the entire surface structure and not just in one area of the grave architecture. Furthermore, the surface structures of non-disturbed graves tended to exhibit a high level of integrity and, typically, a compact arrangement of stones.

The surface structure of Grave 68 illustrates this concept of consistency (Figure 5). In this example the surface structure displayed a large number of tightly packed stones located directly over the grave pit. The stones were all roughly the same size and were positioned so that they all overlapped each other to some extent. Finally, there were no prominent openings in the surface structure.

However, it was observed that not all grave surface structures at KN XIV displayed a consistent pattern. In particular, there were a number of surface structures that displayed major disruptions and inconsistencies with regard to stone size, shape, placement and/or distribution (e.g., G 30, 31, 70, 71, 73, 75, 79, 82). Furthermore, these structures tended to be somewhat scattered over a much larger area and included both small and large openings in the distribution. Some of the surface structures were so disrupted and dispersed it was difficult to discern one opening in particular (e.g., G 80, 81, 87). However, there were other graves that had very prominent large openings (Figure 6). These larger openings were typically oval or circular in shape and were either completely enclosed or were surrounded on three sides by the paving stones (e.g., G 30, 31, 61, 70, 71, 74, 78). The openings ranged in size from 1.3 to 4 m with an average diameter of 2.76 m (Table 1). It is important to note that these large openings had a, somewhat, deliberate appearance to them. The analogous positioning of the stones around these openings and the lack of stones within them suggests that they were purposefully created this way. Furthermore, there is a repetitive pattern to these large openings in that they tended to be located over the south and west portion of the pit or were positioned just southwest of the pit while the north and east ends of the pit typically remained covered by the paving stones.

4.1.3 Grave Pit Structure

Similar to the surface structures, a non-disturbed grave pit at KN XIV displayed a relatively consistent arrangement with regard to stone size, shape, placement and distribution (e.g., G 17, 25, 27, 28, 46, 53, 58, 68). The pits were typically, but not always, filled with a relatively high number of tightly packed stones of the same general shape and size. They had intact pit boundaries and no conspicuous openings in the distribution from the surface to the burial level.

Conversely, there were a number of cases where the grave pit stones displayed major disruptions with regard to their size, shape, placement and distribution (e.g., G 30, 31, 52, 70, 71, 80, 82, 83, 84). The boundaries of these pits were often disrupted and/or no longer intact, the pits had a much lower frequency of stones, and there were obvious openings between the pit stones. Many of the graves that had major disruptions within the pit displayed an uneven distribution of stones (e.g., G 72, 74, 75, 81, 87). These graves tended to have large stones packed tightly together in the east end of the pit, and either a few small stones or no stones at all in the west end of the pit (Figure 7). This pattern of uneven distribution was found to occur on all levels of excavation, from the surface to the burial level.

It should be noted, that there was a strong association between graves that displayed openings in the surface structure distribution and openings in the pit fill (e.g., G 30, 31, 70, 71, 82). It seems plausible that the same activity produced both of these patterns in the grave architecture.

4.1.4 Grave Architecture Summary

After determining that there were indeed significant patterns in the physical remains of the surface and pit structures the graves were independently analyzed and classified according to their characteristics.

Surface Structure

It was clear that patterns in the grave surface structures ranged in degree of disruption from intact to substantially disturbed. In order to standardize the analysis a number of operational definitions were developed that accounted for the range of surface structure variability at the cemetery.

Intact

These surface structures displayed a relatively consistent pattern with regard to stone size, shape, placement and distribution within the entire surface structure. As noted above, *consistency* refers not only to how tightly the stones were packed together, but pattern and positioning of the stones. Surface structures that exhibit a high degree of homogeneity, whether it is a high or low number of stones, are considered consistent. Overall, most of the intact surface structures had a large frequency of similar sized stones positioned in a compact arrangement over the grave pit. Examples of intact surface structures include Graves 46, 48, 53, 60, 64, and 65.

Partially Intact/Disturbed

The primary difference between this category and the previous one is that the stones of these surface structures displayed a somewhat inconsistent pattern with regard to stone size, shape, placement and distribution within the entire surface structure. In this context, inconsistent refers to surface structures that were predominantly intact but displayed some signs of disruption and/or small openings in the distribution. Graves 40, 41, 49, 54, and 66 are examples of graves with partially intact/disturbed surface structures.

Substantially Disturbed

The stones of these surface structures displayed major pattern disruptions with regard to stone size, shape, placement and distribution within the entire surface structure. The surface structures from these graves had notably larger distributions than the previous categories and tended to exhibit large openings in the distributions. Examples of graves with substantially disturbed surface structures are Graves 30, 31, 71, 72, 73, and 82.

Pit Structure

Similar operational definitions were developed to evaluate the degree of disruption to the grave pit structures.

Intact

The stones of the grave pit displayed a relatively consistent pattern with regard to stone size, shape, placement and distribution. Again, the term consistent refers to a high degree of pit stone distribution and size homogeneity within the grave pits. Some intact grave pits had a low frequency of pit stones (e.g., G 10, 19, 23) however the few stones remaining in these pits were evenly distributed throughout the grave. Most of the grave pit boundaries in the intact graves were clearly defined and uniform. Examples of graves with intact pit structures are Graves 25, 27, 44, 53, 58, 60, 68.

Partially Intact/Disturbed

The stones of the grave pit displayed a somewhat inconsistent pattern with regard to their size, shape, placement and distribution within the entire pit. Many of these graves had pit stones that were of different size, included occasional small opening in the distribution, and had a somewhat uneven distribution of stones. Examples of graves with partially intact pit structures include; Graves 32, 41, 43, and 62.

Substantially Disturbed

The stones of these grave pits displayed major disruptions with regard to their size, shape, placement and distribution within the entire pit. Many of these pit structures had large openings and an uneven distribution of stones within the pit. Additionally, the boundaries of these pits were often disrupted and/or no longer intact. Graves 30, 31, 61, 70, 71, 74, 75, 78, and 80 are all examples of graves with substantially disturbed grave pits.

Each grave's surface and pit structure was independently analyzed and classified (Table 4). Graves that had intact surface and pit structures are classified as Intact (Cell R1). Graves that displayed some limited disruption to the architecture, either surface *or* pit structure, are classified as Partially Intact (Cell R2). Graves that had a partially intact/disturbed surface *and* pit structure are classified as Inconclusive (Cell R3). Graves that had either a pit or surface structure partially intact but the other variable is determined to be substantially disturbed are classified as Partially Disturbed (cell R4). Lastly, graves that displayed substantially disturbed surface and pit structures are classified as Substantially Disturbed (cell R5). Attempts were made with additional classifications (e.g., intact, mostly intact, partially intact, inconclusive, partially disturbed, mostly disturbed, substantially disturbed) but it was determined that increasing the number of variables did not significantly affect the outcome of Table 4.

4.2 Human Skeletal Remains

It was believed that the disturbance patterns observed in the grave architecture were linked to disturbance patterns in the skeletal remains, in that, the disturbance processes that were disrupting the grave architecture were also, most likely, affecting the burials. Therefore, in order to analyze the disturbance activities at KN XIV in greater detail it was important to determine patterns, if any, in the condition of the skeletal remains.

4.2.1 Body Position

It was necessary to determine the standard body position for the burials at the cemetery in order to determine disruption or changes to the standard. At KN XIV there were a variety of burial positions observed however; of the 83 individuals recovered from KN XIV, 61 (73.0%) were placed in an extended – supine position with their heads in the west end of the grave and their feet in the east. More than half of the 61 individuals positioned in this manner had their arms lying beside their bodies with their hands placed either on or below the pelvis. Seven (8.0%) other individuals were also lying in a supine position but in these cases they had their legs laterally splayed and knees flexed.

Burials 28 and 36.1 were probably secondary interments. According to White (1991:272) "a secondary interment is a burial in which the bones of a skeleton are not in 'natural' anatomical relationship but have been gathered together some time after complete or partial disarticulation of the skeleton and then buried. Sometimes this burial comprises a bundle of bones." This definition accurately describes the interment type of both of these burials. It should be noted that secondary burials, for example Burial 36.1, may have been added to a grave that was originally constructed for a different interment, such as Burial 36.2.

Lastly, the body position of the 13 (16.0%) remaining individuals could not be determined because there were too few skeletal elements and/or the bones were substantially displaced from anatomical position.

4.2.2 Non-Disturbed Human Skeletal Remains

To better understand how the various burials at KN XIV were disturbed it is important to comment on the condition of the burials that are believed to have not been disturbed. Firstly, there were 8 interments that displayed almost no disruption to the remains (e.g., B 11, 34, 46, 68). Burial 46 (Figure 8) provides an example of these articulated and complete burials. Secondly, a number of other burials displayed some minor evidence of missing or disintegrated skeletal elements, however it was determined that these individuals were, most likely, exhibiting the effects of poor preservation (e.g., B 10, 12, 23, 39, 45, 48). Lastly, there were 5 burials (B 14, 15, 19, 58, 64) that demonstrated some disarticulation and missing elements that can, probably, be attributed to disturbance by burrowing animals and/or other natural taphonomic processes rather than cultural disturbance.

Nawrocki (1995) notes that small burrowing animals often access graves and if the grave is shallow can cause a considerable amount of disruption to the skeletal remains, both by dispersing and fracturing the bones. Likewise, floralturbation, disturbances to the graves by plants, can have extensive effects on human remains in a cemetery environment (Nawrocki 1995). At KN-XIV there may have been some minimal animal and root activity that would have increased the rate of bone deterioration, however there is little chance the extensive and repetitive disturbance indicators outlined below were caused by these processes.

4.2.3 Articulation and Completeness of Human Skeletal Remains

The burials at KN XIV ranged in degree of articulation and completeness. As mentioned some of the individuals were very complete and articulated, while others were noticeably disarticulated and missing numerous bones (e.g., B 21, 31, 40, 70, 79, 83, 84). There was one grave (G 30) that had no skeletal elements remaining at all. Some of the missing skeletal remains, in these cases, may be attributable to poor preservation but it is interesting to note that in a number of graves (e.g. G 61, 74, 76, 78) the elements remaining are relatively well preserved. In these cases bone removal seems to be a more likely explanation.

A conspicuous pattern at the cemetery was the number of cases where the individuals displayed major disarticulation of the upper body (e.g., B 53, 63, 73, 74, 76, 81). In some of these graves the bones of the upper body are present but disarticulated (B 53, 63) while in other examples the bones from the pelvis to the head are mostly missing (B 76). Although the degree of upper body disarticulation and completeness varied among all of these burials the lower legs, in most cases, remain articulated and intact.

Of the 10 burials displaying disruption to the upper body there were 5 that exhibited a pattern of disturbance to the upper right side of the individual (B 61, 72, 73, 78, 81). For example, in Grave 73 (Figure 9) the individual was lying in an extended and supine position with the arms semi-flexed and the hands resting on the pelvis. The majority of skeletal elements present were moderately preserved and found in articulated position. However, the skull, right scapula, both clavicles and the right humerus were all absent from the grave. Although present, the right radius was disarticulated and was moved northwest of normal anatomical position. The ribs and a number of cervical vertebrae were located jumbled together in the west end of the pit where the cranium would normally be located.

Overall, the three major patterns identified in the skeletal remains were burials that were in anatomical position and complete, burials that were very disarticulated and incomplete, and burials that displayed upper body disarticulation and/or incompleteness. In order to categorize the individuals expressing similar patterns and characteristics each burial was independently analyzed and the percentage of skeletal remains lying in anatomical position and completeness was assessed.

4.2.4 Human Skeletal Remains Summary

Articulation

The percentage of skeletal elements remaining in anatomical position was determined for each individual. For the purposes of this analysis, articulation is defined as a condition "in which adjacent bones are in contact (via cartilage or fibrous tissue) at a joint" (White 1991:33). The burials at KN XIV no longer had cartilage or fibrous tissue connecting the bones. However, the skeletal elements were considered articulated if they were basically in anatomical position at the time of excavation.

>75% Articulated

Interments in this category displayed little, or no, signs of disruption to the skeletal remains. Any disruption in these cases is, most likely, attributable to natural taphonomic factors such as burrowing animals and/or lack of bone preservation. Examples of burials that are >75% articulated are; Burials 11, 32, 46, 55.

25–75% Articulated

Burials in this group displayed a wider range of articulation. In some of these cases, similar to what was observed in the first category, the disarticulation could be attributable to natural taphonomic factors (e.g., B 38, 53, 63). In other cases, (especially burials with the upper body disarticulated) the disarticulation of the remains was, most likely, attributable to cultural activity (e.g., B 76, 78, 79, 80.2).

<25% Articulated

Burials within this category had few to no elements remaining in anatomical position (e.g., B 28, 47).

It should be noted that some subjective assessment had to be incorporated into the analysis of body articulation. For example, in Grave 82 there were only a few very fragmented elements (2 teeth, a right humerus, both femora, and the left tibia and fibula) lying in relative anatomical position. It could be argued that these elements were more than 75% articulated, however the fact that one of the teeth was located under the femur and there are so many elements missing casts doubt on this assertion. In this case the burial was categorized as 25–75% articulated due to the prevalence of missing elements and the location of the teeth.

Completeness

When discussing disturbance to human remains articulation must be analyzed in conjunction with skeletal completeness. Completeness refers to the amount of skeletal material remaining in each grave. Lieverse (1999, n.d.) has already determined the skeletal completeness for all the bones recovered from the 83 individuals. For this thesis that level of detail was not required so I estimated the percentage of completeness for each individual not each bone.

>75% Complete

Individuals in this category tended to have the majority of their skeletal elements remaining in the grave (e.g., 11, 32, 46, 55). In these cases any missing elements could typically be attributable to natural factors, such as poor preservation.

25–75% Complete

These individuals tended to range in variability (e.g., G 16, 76, 86, 87) but the difference between this group and the last category is that these burials had a significant amount of skeletal material missing from the grave which could not easily be attributed to poor preservation. It is important to note that the burials that were missing only their heads are all, by definition, included in this category. It will be discussed how heads may have had special significance at KN XIV and this phenomena is explored further in Chapter Six.

<25% Complete

Lastly, the individuals that were <25% typically were missing the majority of their remains (e.g., B 33, 40, 77, 84). Grave 30, the burial with no remains, is included in this category because the remnants of grave architecture support the idea that it was originally built as a grave and it is assumed that the remains, were once present and are now completely gone.

Each burial's percentage of articulation and completeness was independently analyzed and classified (Table 5). Burials that were articulated and complete are classified as >75% complete and intact (Cell D1). Individuals that displayed either slight disarticulation *or* incompleteness were classified as 25–75% complete or intact (Cell D2). Whereas, burials that exhibited disarticulation *and* incompleteness were classified as inconclusive (Cell D3). Burials that were either much disarticulated *or* noticeably incomplete were classified as <25% complete or intact (Cell D4). Lastly the burials that were very disarticulated *and* incomplete were classified as <25% complete and intact (Cell D5). Similar to the grave architecture, smaller categories detailing completeness and articulation were experimented with (e.g., >80%, 40–60%, 20–40%, and <20% complete and/or articulated) however, it was determined that smaller ranges did not significantly alter the outcome of burial distribution on Table 5.

4.3 Grave Condition

A comparison of the skeletal remains with the grave architecture confirmed that there are important associations between these two mortuary features. Intact grave surface and pit structures are typically associated with burials that are articulated and complete. Conversely, disrupted architecture is associated with disarticulated and absent skeletal remains.

Grave 74 provides an example of how disrupted grave architecture is, most likely, associated with disturbance to the skeletal remains. There was a significant open area in the surface structure (Figure 6). The opening was enclosed on three sides with stones and approximately 2.0 m in diameter. The paving stones surrounding the opening and grave pit were piled two or three stones deep, with the stones overlapping each other. It was eventually determined that the opening was positioned over the southwest end of the grave pit. The eastern end of the grave pit was densely packed with relatively large stones while the west end of the pit was devoid of grave stones. This pattern extended to the third and fourth excavation levels where the stones were also packed tightly together in the east end of the pit and were essentially not present in the west end of the pit. The burial contained the moderately preserved remains of a male, determined to be 25 to 35 years old. The individual was placed in the grave in an extended supine position with his head in the west and his feet in the east. A fragment of scapula, and mandible were found in the upper levels of the excavation, however the burial was missing a number of major skeletal elements including the cranium, clavicles, humeri, radii, ulnae, ossa coxae, femora, and the patellae. The only articulated and complete skeletal elements present were the right and left lower legs and feet which were covered by a paving stone placed directly on the skeletal elements (Figure 10). It is very likely that the disruption and openings in the surface and pit structure are directly associated with the disarticulated and missing skeletal elements of the individual within the grave.

In order to further elucidate disturbance patterns at KN XIV, the classification of the information from the grave architecture condition and the condition of the skeletal remains was amalgamated (Table 6). The five categories of grave architecture were arranged along the 'y' axis and the categories decreased in order from intact graves at the top to the most disrupted graves at the bottom. Likewise, the five categories of burial condition were arranged along the 'x' axis with the most complete and articulated artifacts on the far left extending across the table to the most incomplete and disarticulated burials on the far right.

The distribution of graves in this table and the manner in which they grouped together allowed me to divide the graves into four major categories (see below). It should be noted that the analysis of the grave architecture and skeletal remains involved a degree of subjective interpretation. However, it will be demonstrated that these four categories are, in fact, archaeologically significant when analyzed in the context of the other mortuary variables such as grave inclusion and spatial data.

4.3.1 Non-Disturbed Graves

The surface structure of these graves tended to display a consistent pattern with regard to stone size, shape, placement and distribution throughout the entire surface structure. In addition, the surface structure exhibited a high level of integrity and a compact arrangement of stones. The stones within the grave pit also exhibited a relatively consistent pattern with regard to stone size, shape, placement and distribution. Furthermore, the boundaries of the pit itself were predominately intact.

The majority of individuals within these graves were very complete (75–100%) and articulated and exhibited no major signs of disruption. There were 5 graves (G 17, 25, 28, 33, 65) located in cells D3/R1 and D4/R1 that contained burials displaying signs of disarticulation and/or were somewhat incomplete. However, it was determined that these patterns were likely attributable to poor preservation and/or burrowing animal activity. Therefore, these graves have also been included with the rest of the graves that were 75–100% complete and articulated.

In total 31 graves (G 9, 10, 11, 12, 14, 15, 17, 19, 23, 25, 27, 28, 29, 32, 33, 34, 35, 37, 39, 45, 46, 48, 49, 50, 55, 58, 60, 64, 65, 66, 68) were classified as *non-disturbed* (Table 7, Figure 11).

4.3.2 Moderately Disturbed Graves

Although these graves are described as *moderately disturbed* their surface structure tended to display *major* pattern disruptions with regard to stone size, shape, placement and/or distribution. There was typically an uneven distribution of stones on the surface that included openings in the vicinity of the southwest end of the grave pit. The stones within the grave pit also exhibited major pattern disruptions with regard to their size, shape, placement and/or distribution. Furthermore, there was often an uneven distribution of stones within the pit (for example, graves that had an intact, tightly packed east end and few or no stones in the west end). Lastly, the boundaries of these pits tended to be hard to distinguish and somewhat disrupted.

Nevertheless, these graves are classified as *moderately disturbed* because the skeletal remains of the individuals within these graves were fairly complete (50–75%), particularly the inferior skeletal elements (from the pelvis to the feet). However, in contrast to the pattern observed in the *non-disturbed* graves, the majority of the individuals in these graves were missing skeletal elements from the upper body, especially the heads and the bones from the superior right side of the body.

Overall, 13 graves (G 24, 57, 61, 71, 72, 73, 76, 78, 79, 80, 81, 86, 87) were classified as *moderately disturbed* (Table 7, Figure 11).

4.3.3 Extensively Disturbed Graves

The surface and pit structure of these graves displayed the same characteristics as the *moderately disturbed* graves. The major difference between this group and the *moderately disturbed* graves is that the individuals within these graves were very incomplete (25% or less) and noticeably more disarticulated. It should be noted that 2 of these burials (B 74 and 82) had skeletal elements still in anatomical position but the majority of the remains of these 2 individuals were absent.

In total, 11 graves (G 30, 31, 52, 62, 70, 74, 75, 82, 83, 84, 85) were designated as *extensively disturbed* (Table 7, Figure 11).

4.3.4 Inconclusive Graves

The graves in the *inconclusive* category are different from the *moderately* and *extensively disturbed* graves in that the physical remains of the surface and pit structure in this category were predominantly intact, similar to the grave architecture of the *non-disturbed* graves. However, the individuals in the *inconclusive* graves differed from the *non-disturbed* graves in that, in many cases, the burials displayed some significant incompleteness and disarticulation. The burials ranged from either fairly complete (>75%) and articulated to very incomplete (<25%) and disarticulated.

It is important to address in more detail the 9 graves (G 16, 36, 38, 44, 47, 51, 53, 59, 63) within this category that are grouped with the *non-disturbed* graves. According to Table 6 graves 38, 44, and 51 have intact architecture and all 3 individuals were quite articulated and complete. This is true, however, in each case the skull was found shifted out of anatomical position. In G 38 the cranium was located on the left side of the chest. In the case of G 44 the head was upside down with the foramen magnum facing up. Lastly, in G 55 the head was dislocated and lying on the right side of its frontal bone. As we will see, heads may have had a special significance at KN XIV, particularly in regard to grave disturbance. Therefore, although the rest of their characteristics indicate that these graves should be placed within the *non-disturbed* category, the notable movement of the heads from anatomical position requires that these graves receive the designation of *inconclusive*.

The other 6 *inconclusive* graves (G 16, 36, 47, 53, 59, 63) originally grouped with the *non-disturbed* features also have architecture that is intact and skeletal remains that are complete. In these cases, however, the remains exhibit more pronounced signs of disarticulation than Graves 38, 44, and 51. For example, Grave 63 displayed an intact surface structure and the grave pit was very well packed with stones and appeared to be undisturbed. The burial level contained the remains of a 16 to 18 year old of unspecified sex. The skeletal elements were relatively well preserved and a number of them were in articulated position including the left and right ossa coxae, femora, tibiae, and fibulae although it appeared as though the right femur was rotated laterally. The superior skeletal elements, however, were much more disarticulated. It was important in these 9 cases to recognize that activities seem to have occurred that were not being accounted for by the developed classifications summarized in Table 6. In these cases the designation *non-disturbed* needed to be overruled and these graves were classified as *inconclusive.*

In total, 18 graves (G 16, 21, 22, 26, 36, 38, 40, 41, 42, 43, 44, 47, 51, 53, 54, 59, 63, 77) were classified as *inconclusive* (Table 7, Figure 11).

Once these categories were established they were analyzed within the context of other mortuary variables such as; grave good inclusions, temporal data, spatial data, and the use of fire. This analysis not only offers additional information about grave disturbance it confirms that these categories are, in fact, meaningful and significant. Results of this examination are presented in Chapters 5 and 6.

Chapter Five: Grave Condition and Grave Inclusions

5.1 Introduction

This section examines the artifacts recovered from KN XIV in the context of the four grave conditions outlined in Chapter Four. As many archaeologists (Saxe 1971; Tainter 1975; O'Shea and Zvelebil 1984; Carr 1995) have demonstrated, studying burial goods included at the time of interment may offer important insight into the status and social role of the deceased individual. Here I attempt to identify any patterns between the grave goods and disturbance activities at the cemetery. A comprehensive analysis of the grave inclusions recovered from KN XIV is the subject of a separate analysis (M^{c}Kenzie n.d.).

5.2 Ornaments

The vast majority of artifacts recovered from KN XIV are ornamental grave goods (Table 3). Of the 5348 ornamental artifacts, 5190 (97.0%) are cylindrical beads of which 5171 are made of kaolinite while the remaining 19 are made from bone/antler. In most cases it was possible to associate all of the kaolinite beads with a particular burial; however, there were a number of multiple interment graves (G 27, 35, 36, 37, 57, 58) where the beads could not easily be associated with a specific individual. A closer examination of the distribution reveals that 2974 (57.5%) of the kaolinite beads were located in the *non-disturbed* graves and 1701 (32.9%) were found in the *inconclusive* graves. This is noticeably more than the 458 (8.9%) and 38

(0.7%) kaolinite beads located in the *moderately* and *extensively disturbed* graves respectively (Table 8, Figure 12).

One hundred and twenty five ornamental red deer canine pendants were located at KN XIV (Table 8, Figure 13). There were 68 (54.4%) recovered from the *non-disturbed* graves, 18 (14.4%) from the *moderately disturbed,* 8 (6.4%) from the *extensively disturbed,* and 31 (24.8%) from the *inconclusive* graves. Similar to the kaolinite beads the red deer canine pendants appear to be noticeably more prevalent in the *non-disturbed* and *inconclusive* graves.

Additionally, there were seven ring-shaped ornamental artifacts recovered from the cemetery (Table 8, Figure 14) all of which were located in association with the burials. Two of the rings were composed of nephrite (one green and one white), one from calcite, and four were made out of a copper/bronze material. The rings ranged in diameter from 1.6 cm to 4.2 cm. Of the 3 ground stone rings 1 (33.3%) each was found in the *non-disturbed, moderately disturbed,* and *inconclusive* graves and none were located in the *extensively disturbed* graves. Regarding the copper/bronze rings: 2 (50.0%) were located in the *non-disturbed* graves, 1 (25.0%) in a *moderately disturbed* grave, and 1 (25.0%) in an *extensively disturbed* grave.

Ground stone discs were often located together with the rings. They range in size from 1.2 cm to 4.9 cm in diameter and it is believed that these discs were part of the clothing or headdresses worn by the Glazkovo people (Okladnikov, 1959). In total, 26 discs, 14 nephrite (all white) and 12 calcite, were found at the site (Table 8, Figure 14). Like the rings, the ground stone discs are present in all categories of graves, in that there were 10 (38.5%) discs in the *non-disturbed*, 4 (15.4%) in the *moderately disturbed*, 5 (19.2%) in the *extensively disturbed*, and 7 (26.9%) in the *inconclusive* graves.

In addition to the red deer canine pendants there was a small selection of other faunal artifacts that were probably also ornamental in nature. For example, 2 bear claws were collected from a grave that is classified as *non-disturbed* (G 14); a hare's foot (G 61), and a beaver tooth enamel artifact (G 86) were recovered from *moderately disturbed* graves; 1 bear canine and 5 musk deer canine fragments were recovered from a grave classified as *extensively disturbed* (G 74); and lastly, an unassociated elk tooth, 11 animal phalanx pendants and 1 flat bone pendant were located in 2 graves classified as *inconclusive* (G 38 and 42). These faunal ornamental artifacts were found in all classes of graves and do not seem to be explicitly associated with one type.

5.3 Implements

In total, 278 implements were recovered from KN XIV (Table 3): 40 (14.1%) were located in the *non-disturbed* graves, 76 (27.3%) came from the *moderately disturbed*, 155 (55.8%) were from the *extensively disturbed*, and 7 (2.5%) were from the *inconclusive* graves. Regardless of artifact association it is evident that more implements were recovered from the *moderately* and *extensively disturbed* graves than either the *non-disturbed* or *inconclusive* graves. Overall, more than 80% of all implements were found in, what are believed to be, culturally disturbed graves. This interesting trend is explored in greater detail below.

5.3.1 Flaked Stone Implements

A variety of flaked stone tools were recovered from the cemetery including arrowheads, scrapers, insert tools, bifaces, and blades. These tools were predominantly made of chert, although chalcedony and quartzite were used as well.

A total of 73 arrowheads were found at KN XIV (Table 9, Figure 15). Six (8.2%) of the arrowheads were located in *non-disturbed*, 28 (38.4%) in the *moderately disturbed*, 37 (50.7%) in the *extensively disturbed*, and 2 (2.7%) in the *inconclusive* graves. Interestingly, of the 14 arrowheads that were not associated with a particular burial 3 were located in the *moderately disturbed* graves and 11 in the *extensively disturbed* graves. These data clearly indicate an association between arrowheads and disturbed graves although disturbance activities may have affected burial/artifact association.

Eighteen large bifaces were recovered from the site (Table 9, Figure 15). It was determined that 1 (5.6%) biface was from a grave designated *non-disturbed*, 9 (50.0%) were located in *moderately disturbed* graves, and 8 (44.4%) in the *extensively disturbed* graves. However, of the 8 bifaces recovered from the *extensively disturbed* graves only 3 could be associated with the burials because the other 5 bifaces were recovered from the upper levels of the pits or outside the burial pit. No bifaces were located in the *inconclusive* graves.

Twelve scrapers were excavated from the cemetery; 1 (8.3%) each from the *non-disturbed* and *inconclusive* graves, 6 (50.0 %) from the *moderately disturbed* graves, and 4 (33.3%) from the *extensively disturbed* graves (Table 9, Figure 15). Likewise, the blades recovered from the cemetery reflect a similar pattern to the scrapers. Of the 23 blades; 2 (8.7%) were found in the *non-disturbed* graves, 5 (21.7%) came from the *moderately disturbed* graves, 15 (65.2%) were in the *extensively disturbed* graves, and 1 (4.3%) was from an *inconclusive* grave (Table 9, Figure 15). Two blades from both the *moderately* and *extensively disturbed* graves and one from the *inconclusive* graves could not be associated with a specific burial. However, both of the blades from the *non-disturbed* graves could be associated with an individual. In both sets of artifacts the proportion of implements located in disturbed graves is high: 83.3% of scrapers and 87.0% of blades were located in the *moderately* and *extensively disturbed* graves combined.

In addition, 24 microblade inserts were found at KN XIV (22 associated) and every one of them was associated with *extensively disturbed* graves (Table 9, Figure 15). It should be noted that all of these inserts were located in only 2 graves (G 82, 83).

Lastly, there were 49 stone flakes recovered from the cemetery: 18 (36.7%) from the *non-disturbed*, 6 (12.2%) from the *moderately disturbed*, 22 (44.9%) from the *extensively disturbed*, and 3 (6.1%) from the *inconclusive* graves (Table 9, Figure 15). In contrast to the distribution patterns of the stone implements noted above, there was an equitable amount of flakes located in the *non-disturbed* graves and the *extensively disturbed* graves.

5.3.2 Ground Stone Implements

There were a variety of ground stone tools recovered from KN XIV (Table 10, Figure 16). These implements consisted of 8 green nephrite and/or serpentine axes/adzes (hereafter referred to as adzes), 5 green nephrite knives, and 10 ground slate abraders. Two (20.0%) abraders came from the *non-disturbed* graves, 5 (50.0%) from the *moderately disturbed* graves, and 3 (30.0%) from the *extensively disturbed* graves. No abraders were located in the *inconclusive* graves. It should be noted that not all abraders were associated with a specific burial, however, regardless of association, more than 80% of all abraders recovered were found in either *moderately* or *extensively disturbed* graves.

One (12.5%) adze came from a *non-disturbed* grave, 3 (37.5%) from the *moderately disturbed* graves, and 4 (50.0%) from the *extensively disturbed* graves. Furthermore, only 1 (20.0%) knife was found in a *non-disturbed* grave, while 4 (80.0%) knives were located in the *moderately disturbed* graves. No ground stone knives were located in the *extensively disturbed* graves, and, in fact, no ground stone implements of any kind were located in the 18 graves classified as *inconclusive*.

5.3.3 Organic Implements

Points, spoons, harpoons, fleshers and fishhook shanks made from animal bone or antler material were also excavated from KN XIV (Table 11, Figure 17). In all cases the proportion of bone and antler implements is notably higher in the *disturbed* graves than the graves classified as *non-disturbed* and *inconclusive*.

Of the 10 bone and antler points recovered 2 (20.0%) were located in the *non-disturbed* graves, 3 (30.0%) in the *moderately disturbed*, and 5 (50.0%) in the *extensively disturbed* graves. Likewise, 7 artifacts (6 associated) classified as fleshers were found at the cemetery. Two (28.6%) came from the *non-disturbed* graves, 1 (14.3%) from the *moderately disturbed*, and 4 (57.1%) from the *extensively disturbed* graves. One flesher was not directly associated with an individual and it was found in an *extensively disturbed* grave. No points or fleshers were located in the *inconclusive* graves.

Some other organic implements were located exclusively in the *moderately* and *extensively disturbed* graves. Two spoons (50.0%) were found in the *moderately disturbed* graves and the other 2 (50.0%) were found in the *extensively disturbed* graves. Similarly, 1 (50.0%) harpoon was located in a *moderately disturbed* grave, and 1 (50.0%) was found in an *extensively disturbed* grave.

Lastly, there were 20 (100.0%) fishhook shanks recovered from the *extensively disturbed* graves. It is interesting to note that there were no bone and antler implements recovered from the *inconclusive* graves at all. The concentration of bone and antler implements in the disturbed graves appears to correspond to the pattern observed for the flaked and ground stone implements outlined above.

5.4 Pottery

Most of the pottery fragments were found on the surface and they were probably not associated with the initial mortuary ritual of placing the dead in the graves. Nevertheless, it was important to determine whether the pottery remains were associated with the secondary activity of re-opening the graves.

There were 341 pottery fragments recovered from KN XIV (Table 12, Figure 18). In total, 74 (21.7%) fragments came from the *non-disturbed* graves, 5 (1.6%) from the *moderately disturbed*, 95 (27.9%) from the *extensively disturbed* graves, and 167 (49.0%) from the *inconclusive* graves. However, only 22 fragments, 19 (86.4%)

from the *non-disturbed* burials and 3 (13.6%) from the *inconclusive* burials, were determined to be associated with an individual.

It is interesting to see that the majority of the pottery fragments were located in or near the *inconclusive* graves and there were few fragments recovered from around the *moderately disturbed* graves. However, it should be noted that specific data on the size and location of each fragment was not available for this analysis and it is very possible that the patterns noted above are not significant. Therefore, it is not reasonable to make any connection between pottery and grave disturbance until more information about the pottery is available.

5.5 Copper/Bronze Artifacts

In most of the literature, Glazkovo graves are characterized by the presence of metal objects (Michael 1958). However, copper/bronze artifacts are rarely recovered from Bronze Age burials in the Cis-Baikal Region (Goriunova and Weber 2003). As mentioned above, of the 4 copper/bronze rings recovered from the cemetery, 2 (50.0%) were associated with *non-disturbed* burials, 1 (25.0%) came from a *moderately disturbed* grave, and 1 (25.0%) was from an *extensively disturbed* grave. In addition, a copper/bronze needle and a copper/bronze knife were found in *extensively disturbed* graves. However, neither of these implements could be associated with the burials.

5.6 Summary

The analysis of the artifacts in relation to the four grave conditions at KN XIV reveals a number of discernable patterns. Both the prevalence of kaolinite beads in the *non-disturbed* graves as well as the disproportionately high number of implements in the disturbed graves are noteworthy patterns that require further discussion.

There are two potential explanations for the high frequency of the kaolinite beads in the *non-disturbed* graves. One, the kaolinite beads were the primary objective of the disturbers; therefore, they were removed from the graves when they were disturbed. This explanation assumes that the beads held a certain value and that people would have benefited socially, politically, or economically by their removal. However, a closer examination of Grave 57 raises doubt about this hypothesis.

The grave stones of Grave 57 were disturbed from the surface to the burial level. Both interments in the grave had skeletal elements that were missing, out of anatomical position, and commingled (all indicators of disturbance). The grave has been designated *moderately disturbed*. Interestingly, there were 458 kaolinite beads recovered near the skull, chest, pelvis and hands of the male interment (B 57.2) (Figure 19). This is a comparatively large amount of beads and their presence disputes the notion that the grave was disturbed to remove the beads.

The second explanation for the prevalence of beads in the *non-disturbed* graves is that these ornaments were never part of the artifact assemblage of the *disturbed* graves. Individuals interred with beads were predominantly located in the center of the cemetery. It will be demonstrated that the people interred in the eastern part of the cemetery may have had a different social role within Glazkovo society than the people interred in the west and the center. It is quite possible that one of the ways to distinguish these people was through the presence or absence of these beads. The beads could have been worn in life as part of people's clothing, or they were deposited within the graves at the time of interment. Therefore, considering the fact that some of the disturbed graves, such as G 57, still contained a large number of beads it is more likely that the beads were simply not a major component of the grave good assemblage of the people buried in the *disturbed* graves

Turning to the other prominent pattern in the grave good distribution, it is apparent that there is a much higher quantity and diversity of flaked stone, ground stone, and animal bone/antler implements in the *moderately* and *extensively disturbed* graves compared to the *non-disturbed* and *inconclusive* graves. In order to analyze this intriguing relationship in greater detail it is helpful to describe the grave good assemblages of two disturbed graves: Graves 74 (*extensively disturbed*) and 86 (*moderately disturbed*). These two graves are not typical in that they contain sizeable implement assemblages but the diversity and frequency of grave goods in these graves illustrates an important point.

Graves 74 and 86 contained many arrowheads, scrapers, blades, flakes, and fishing implements such as fishhook shanks and a harpoon (Figure 20). In addition, there were two nephrite adzes in each grave. In Grave 74 artifacts were recovered from the entire grave, but there were 2 distinct clusters of artifacts. Cluster 1 was composed of 71 artifacts while Cluster 2 contained 87 artifacts. Both clusters were recovered from the southwest corner of the grave pit. Grave 86 also had 2 primary clusters of artifacts associated with the burial. Cluster 1 was composed of 16 artifacts and was located beside the pelvis, while Cluster 2 contained 12 artifacts and was found beside the left shoulder. The distribution of all four collections of artifacts suggests that each cluster may have originally been inside a bag or satchel of some sort that has since deteriorated.

The distinctive characteristic of these artifact rich graves is that they both appear to have been culturally disturbed. Grave 74 displayed a disrupted surface structure, including a circular opening over the west end of the pit (Figure 6). The paving stones within the grave were heavily concentrated in the east end of the pit and there were few to no stones in the west end of the grave. The burial consisted of the moderately preserved remains of a male individual, estimated to be 25 to 35 years old. There were only a small amount of skeletal elements remaining and those that were present were mostly disarticulated. Missing skeletal elements included the cranium, clavicles, humeri, radii, ulnae, os coxae, femora, and patellae.

Likewise the surface structure of Grave 86 displayed an inconsistent distribution of paving stones, including a large open space south of the pit. Additional levels of excavation revealed an uneven, disrupted arrangement of paving stones within the grave pit. The grave contained the remains of a 20 to 25 year old individual of undetermined sex. The majority of the surviving skeletal elements were in anatomical position and moderately preserved but the burial displayed signs of disturbance in that the skull was missing as well as some other major skeletal elements.

If these graves were disturbed in order to remove the contents why did the grave robbers not take these diverse clusters of artifacts? It is possible that the clusters were placed in the graves at the time of disturbance. In the example of Grave 86, one of the clusters was located just west of the left shoulder, only a few centimetres north of where the head would normally be resting. It is feasible that if the head was removed by humans a satchel of artifacts was placed in the grave as an appeasement to the disturbed dead. This hypothesis could certainly explain why we see so many diverse implements in the disturbed graves. However, a number of the disturbed graves have artifacts clustered throughout the grave, still protected by intact paving stones (for example, G 87). A more likely explanation is that the disturbers simply were not interested in these artifacts and were disturbing the graves for another purpose.

Rich implement assemblages in culturally disturbed graves are not limited to KN XIV. Okladnikov and Konopatsky (1974/75) note that many Glazkovo graves in the region had been disturbed by, in their opinion, looters. They use a selection of burials from Burkhan Cape on Ol'khon Island, which is located in the Little Sea region of Lake Baikal, to illustrate their point. In particular, they comment that "despite their [looters] activity Glazcovo burials here preserved rich inventory. Such are handaxes and the other artifacts of green jade, flint oval knives retouched on both surfaces, scrapers, harpoon-points, tubular needlecases and needles from antler" (Okladnikov and Konopatsky 1974/75: 303). The authors contend that these rich assemblages suggest that these were the burials of 'aristocrats' of Glazkovo society or people that had higher status than the rest of the population. They assert that this status may be attributable to political power or hunting prowess, as the various hunting and fishing artifacts would suggest.

Okladnikov and Konopatsky (1974/75) believe that the primary purpose for opening the graves was to obtain metal artifacts. As mentioned, there were few metal artifacts recovered from KN XIV but what little there was contradicts Okladnikov and Konopatsky's hypothesis. A copper bronze needle was recovered from Grave 62 and a copper bronze knife was recovered from Grave 74. In addition, 2 copper/bronze rings were recovered from Grave 25, 1 from Grave 52, and 1 from Grave 57. Grave 57 is classified as *moderately disturbed* and Graves 52, 62, 74 are considered *extensively disturbed.* It is possible that the presence of the copper/bronze artifacts in the disturbed graves can be attributed to an oversight on the part of the disturbers. However, it is also feasible that, contra Okladnikov and Konopatsky's hypothesis; copper/bronze artifacts were not the primary targets of the people that disturbed the graves.

To examine this premise further I employ an example from another Glazkovo cemetery in the Cis-Baikal region. Kurma XI is located on the coast of the Little Sea, approximately 14 km NE of KN XIV (Figure 1). The Baikal Archaeology Project also excavated this cemetery (Goriunova and Weber 2003). The architecture of Grave 1 at Kurma XI demonstrated all the distinctive signs of cultural disturbance. There was a prominent circular opening in the surface structure (Figure 21) and all levels of excavation revealed that the southwestern half of the pit, where the head was located, was devoid of stones (Figure 22) while the northeastern area of the grave pit was packed tightly with stones.

The burial level of Grave 1 contained the fully articulated and complete remains of a 25–30 year old male. Like the artifact rich graves at KN XIV and

Burkhan Cape, this grave also contained an extensive inventory of artifacts that included flaked stone points, an antler spoon, a two-sided harpoon, a flesher, a flint knife, two white nephrite discs (one of which was found outside of the grave), and red deer tooth pendants. The feature of this grave that is truly intriguing was the presence of an openwork copper medallion located on the chest of the interment (Figure 23). The medallion is 10 cm in diameter and has an anthropomorphic design on the face of it. If this grave was disturbed for the purpose of looting metal artifacts why was the medallion not taken? The fact that the grave displays all the signs of being culturally disturbed yet this remarkable copper artifact was not removed supports the hypothesis that metal artifacts were not the primary goal of the disturbers.

Schulting (1995:33) notes that "utilitarian items of common everyday usage tend to be assigned little real or symbolic value, while special objects, such as those involved in ceremonial activities, tend to be perceived as having a higher value." He adds that items that are constructed from a rare material and are not locally produced often have a greater value placed upon them. In addition, the more labour invested in making a particular object, the higher its perceived value. Copper/bronze artifacts would certainly fall into this category as would, most likely, the nephrite and serpentine ground stone implements and ornaments.

On the pre-contact Northwest Coast of North America nephrite was very valuable both in a utilitarian manner (as a wood working implement) and as an ornament. Nephrite sources were rare and the raw material as well as finished tools was widely traded throughout the region (Ames 1995, Emmons 1991). There are no ethnographic accounts from the Glazkovo period to support the inferred greater value of nephrite artifacts. However, it is important to note that the nearest sources of green nephrite in the Cis-Baikal region are located roughly 300 km west of Lake Baikal in the Sayan Mountains and the nearest sources of white nephrite are located approximately 1000 km northeast of the cemetery close to the Vitim river (Sekerin and Sekerina 2000). Other authors have commented that, considering the lack of local sources, nephrite would have been very valuable to the people of this region (Michael 1958). Assuming the graves were opened for material gains and the nephrite artifacts truly held more value than the other artifacts, there should be fewer of these grave goods in the disturbed graves.

The ornamental nephrite artifacts such as rings and discs were located in both *non-disturbed* and *disturbed* graves throughout the cemetery and it does not appear that they were the primary focus of the disturbers. However, of the eight nephrite adzes recovered from the cemetery seven of them were recovered from *disturbed* graves and only one was recovered from a *non-disturbed* grave (G 9). The fact that 87.5% of all nephrite adzes were located in the disturbed graves further supports the hypothesis that the graves were not being looted for material gains.

Overall, the diversity and richness of artifacts located in the disturbed graves indicates that they were not disturbed in order to remove the grave inclusions. Furthermore, it appears that the individuals interred with all of these artifacts may have had higher status or, at least, different social roles than the other individuals in the cemetery. This will be explored further in the final chapter when I present some alternative reasons for disturbing the graves at KN XIV.

Chapter Six: Grave Condition and Other Elements of Mortuary Variability

This chapter explores other forms of mortuary variability from KN XIV and how they relate to the four categories of grave condition. In particular, I focus on the temporal and demographic aspects, spatial distribution, head treatment, multiple burials, and the use of fire.

6.1 Temporal Aspects of Grave Condition

It is important to note that there are two temporal events that have to be addressed when discussing grave disturbance. First of all we need to establish, if possible, how long after interment the graves were disturbed. Secondly, we need to determine when the graves were constructed and if there are any discernable patterns regarding the four grave conditions in the overall history of the cemetery.

Interestingly, a closer examination of the skulls, or lack of, reveals some important information about the interval between interment and grave disturbance. For the sake of clarity the terminology used here employs White's (1991:45) definitions; the *skull* is the "entire framework of the head, including the lower jaw, the *mandible* is the lower jaw, and the *cranium* is the skull without the mandible." Throughout this discussion the terms heads and skulls are interchangeable.

At KN XIV there were a number of graves missing skulls but containing teeth or tooth fragments (G 71, 73, 81, 82, 86). It is inferred from this evidence that, in these cases, the heads were in the graves at one point in time. Forensic anthropologists have established that post-mortem tooth loss is affected by the age of the individual, dental health, body position and placement, seasonality of interment, and environmental factors (McKeown and Bennett 1995). A detailed analysis of post-mortem tooth loss at KN XIV goes beyond the scale of this immediate analysis, however from this evidence we can surmise that the heads were in the graves long enough for the soft tissue to decompose and some of the teeth to fall out before the heads went missing.

Furthermore, there were 4 interments that had a mandible but no cranium (B 42, 58.2, 74, 77) and 1 individual that had a cranium and no mandible (B 72). It is very difficult to remove the mandible from the cranium while there is still flesh on the skull. It is also very unlikely, if not impossible, that either the cranium or the mandible would deteriorate away to nothing before the other cranial elements decompose. Therefore, the skulls were probably in the graves long enough for the flesh and tissue to decompose and then either the mandibles or crania were removed during an episode of cultural disturbance or animal activity. This evidence, combined with the presence of teeth but no skulls, indicates that the skeletal remains were not disturbed immediately (within weeks or even months) after interment.

However, it is also apparent from the modern appearance of the graves today that the disturbance activities occurred long ago. The cairns have settled flat onto the ground, sediment has filled in the spaces between the stones, sod has grown over the graves, and lichen has covered the exposed grave stones. Therefore, although we do not know exactly when the graves were disturbed it is evident that the disturbance activity is not recent (within the last 100 years).

Turning to other sources of temporal information, radiocarbon dating of a hunter-gatherer cemetery can offer important insight into intra- and inter-cemetery temporal patterns[4]. Weber *et al.* (2005) show that KN XIV was utilized by the Glazkovo people for approximately 700 years, from around 2700 – 2000 BC (calibrated). Within that period, cemetery use increased until it peaked for a period of roughly 200 years around 2400 BC. During this time 70% of all graves were built.

Due to the fact that many of the date standard deviations overlap, it is impossible to determine a diachronic burial-by-burial account of the cemetery. Nevertheless, it is clear that all types of graves (*non-disturbed*, *moderately disturbed*, *extensively disturbed*, and *inconclusive*) were constructed throughout the entire lifespan of the cemetery. In addition, the disturbed graves appear to be concentrated around 2400 BC, thus displaying the same temporal peak as the cemetery as a whole.

Although radiocarbon dates from human remains provide detail on when the individuals were interred, they do not reveal when the graves were disturbed. Overall, the temporal analysis suggests that the graves were not disturbed directly after interment, nor were they disturbed in recent times. It also appears that the graves that were selected for disturbance were interred throughout the entire history of the cemetery. I return to this issue of when the graves were disturbed in Chapter 7 when I discuss another important question: *why* were the graves at KN XIV disturbed?

6.2 Demographic Aspects of Grave Condition

At KN XIV the Glazkovo burials consisted of 18 males, 3 females, 9 *probable* males and 2 *probable* females (Lieverse n.d.). For the purposes of this analysis I have included the *probable* males with the males and the *probable* females with the females. The other 51 individuals were unable to have a sex assigned to them due to poor preservation, lack of skeletal material, and/or they were too young to display sex determining characteristics (Lieverse n.d.). The high proportion of unsexed adult individuals suggests that males substantially outnumber females in the cemetery. However, M^{c}Kenzie *et al.* (n.d) and Lieverse (n.d.) have shown that statistically there is probably not an inequity in sex distribution among the burials.

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[4] A more extensive discussion of the radiocarbon analysis at KN XIV can be found in Weber and Goriunova (2003), Weber *et al.* (2005) and Weber *et al.* (n.d.).

Notwithstanding the low number of individuals that had a specific sex attributed to them it is important to analyze this information within the context of the grave disturbance categories (Table 13, Figure 24). First of all, of the 27 males identified at the cemetery 15 (55.6%) were located in *non-disturbed* graves, 4 were from the *moderately disturbed* graves, 2 (7.4%) were from the *extensively disturbed* graves, and 6 (22.2%) were from the *inconclusive* graves. As we can see, the males were found in all categories of graves but there seem to be more of them in the *non-disturbed* and *inconclusive* graves. In fact the distribution of male burials seems to approximately reflect the overall distribution of total graves in the cemetery in comparison to the four grave conditions. This pattern suggests that the male burials are not being specifically targeted or avoided by the grave disturbers and there are other variables that determine which graves are disturbed.

Secondly, of the 5 females identified at KN XIV; 4 (80.0%) were located in the *non-disturbed* graves and 1 (20.0%) was found in a *moderately disturbed* grave. No females were found in either the *extremely disturbed* or *inconclusive* graves. This information may imply that graves containing females are not being targeted for disturbance. However, the sample size of female burials is too small to make any definitive statements about this pattern.

Thirdly, it is interesting to note that the undetermined individuals, 15 years of age and older, appear to be located in every type of grave condition at the cemetery. There were 8 (25.8%) individuals recovered from the *non-disturbed*, *moderately disturbed*, and *extensively disturbed* graves respectively and 7 (22.6%) from the *inconclusive* graves. This even distribution may suggest that these graves are not being targeted for disturbance simply because the individuals are adults, otherwise there would be a disproportionate amount of burials in the disturbed categories. Therefore, there must be another dimension of mortuary variability that is influencing the grave disturbers.

Lastly, of the undetermined individuals under 15 years of age 10 (55.8%) were located in the *non-disturbed* graves, 1 (5.6%) in a *moderately disturbed* grave, 1 (5.6%) in an *extensively disturbed* grave, and 6 (33.3%) in the *inconclusive* graves. This evidence clearly indicates that subadults are not being targeted for disturbance.

The lack of subadult burials in disturbed graves is a noteworthy pattern that requires further analysis. Age at death data were compiled and then divided into 6 age categories (Table 14, Figure 25). Of the 81 individuals analyzed, 27 (33.4%) were determined to be under 20 years old and 54 (66.6%) were over 20 years of age. It was anticipated that dividing the individuals under 20 years old into 2 groups would provide greater resolution regarding grave disturbance. Therefore, this group was divided into two different categories: children <15 years and adolescents between 15 and 20 years.

Within the children age group, 10 (55.6%) of the burials were located in *non-disturbed* graves, 1 (5.6%) was found in a *moderately disturbed* grave, 1 (5.6%) was in an *extensively disturbed* grave, and 5 (33.3 %) were found in *inconclusive* graves. The one child interment that was *extensively disturbed* was Burial 62.2; which represented an 8–10 year old child. Interestingly, this child was interred in the grave with an adult male (B 62.1). Therefore it is quite possible that the presence of the adult in the grave influenced the decision to disturb the grave.

Within the adolescent age group there were 4 individuals (44.4%) in the *non-disturbed* graves, 1 (11.1%) in a *moderately disturbed* grave, 1 (11.1%) in an *extensively disturbed* grave, and 3 (33.3%) in the *inconclusive* graves. The one adolescent burial in the *extensively disturbed* graves was Burial 84; a 13–19 year old individual. If this individual was, in fact, closer to 19 years of age at the time of death it is possible that he or she was considered an 'adult' in Glazkovo society. Likewise, the only individual recovered from the *moderately disturbed* graves (B 57.1) was determined to be 18–20 years old which also places them close to, what could be considered, adulthood. Furthermore, similar to Burial 62.2, Burial 57.1 is located in a grave with an adult (a probable male 35–50 years old).

If we remove the child and adolescent burials that were interred with an adult as well as any adolescents that could be as old as 19 years, the only remaining individual is Burial 71, a 12–15 year old. There are no distinguishing characteristics about this burial to suggest why he or she was targeted for disturbance. However, these data further support the hypothesis that graves containing children are not being intentionally disturbed.

Looking at the rest of the age data it is worth commenting on the fact that 85.6% of the *moderately disturbed* graves and 81.9% of the *extensively disturbed* graves contained individuals over the age of 20 years. Interestingly there was only one individual from a *moderately disturbed* grave and none from the *extensively disturbed* graves that was determined to be over 50 years of age. Therefore, it is important to emphasize that disturbance activities at KN XIV appear to be predominantly affecting graves containing individuals between the ages of 20 and 50 years.

6.3 Spatial Aspects of Grave Condition

Now that we have some information about *who* is being disturbed it is important to analyze *where* the disturbed graves are located in the cemetery. One of the primary approaches to the investigation of mortuary variability is determining spatial patterns within the cemetery (Chapman and Randsborg 1981). Graves with intact architecture were found in the west and center parts of the cemetery, while, the graves that displayed disturbed surface structures and grave pits were predominantly located in the eastern section of the cemetery (Figure 26). Likewise, individuals that were articulated and complete were predominantly located in the west end and center of the cemetery and burials that were disarticulated and missing skeletal elements were located more in the east end (Figure 27).

Overall, the spatial patterns of the four grave conditions are quite clear (Figure 28). Graves classified as *non-disturbed* were located exclusively in the west end and the center of the cemetery. Conversely, the *moderately* and *extensively disturbed* graves were found predominantly on the eastern end of the cemetery with a few exceptions. Lastly, the graves defined as *inconclusive* were found throughout the site, but tended to be located in the center of the cemetery.

The grave disturbers definitely seem to be targeting the graves in the eastern end of the cemetery. In fact, this is one of the few characteristics about grave disturbance at KN XIV that we say with great certainty. The question is why the disturbers chose the graves in the east end for disturbance? Artifact distribution patterns suggest that the people interred in the eastern part of the cemetery had a different identity or social role within Glazkovo society, compared to the individuals interred in the center and the east. If this is true, the 6 graves displaying characteristics of disturbance that were located in the west and center of KN XIV should have similar traits.

There were 2 *moderately* (G 24 and 57) and 4 *extensively disturbed* (G 30, 31, 52, and 62) graves that were conspicuously located in the west and center part of the cemetery. For the purposes of this part of the discussion it is reasonable to discuss the *moderately* and *extensively* disturbed graves together to better identify the major characteristics of these graves.

A detailed examination of the 6 graves reveals that, as expected, all them have disrupted paving stones and large openings in their surface and pit structures. Two of the graves contained 2 individuals (G 57, 62) while the other 4 graves held 1 interment. The physical condition of the skeletal remains ranged from articulated and complete except for a missing head (G 24), to somewhat disarticulated and heavily charred (G 52, 57, 62), to highly disarticulated and incomplete (G 31), to no skeletal remains at all (Grave 30).

Likewise, the artifact assemblage varied greatly from grave to grave. Three of these graves had small, predominantly ornamental, artifact assemblages (G 24, 30, 31). For example, Grave 24 only contained 1 red deer canine pendant and 1 white nephrite disk. The other 3 graves (G 52, 57, 62) had somewhat medium sized assemblages compared to the more elaborate grave good assemblages from the cemetery (e.g., G 74, 86). It is interesting to note that Graves 52, 57, and 62 all contained a copper or bronze object. As mentioned, metal artifacts are rare in the cemetery (see Chapter 5) and it is intriguing to see that of the six copper/bronze artifacts recovered from KN XIV, three of them are from these graves.

Overall, it is the disturbed architecture and skeletal remains that are the distinguishing features linking these graves with the other disturbed graves in the east. The artifact assemblages of Graves 24, 30, and 31 are much more similar to the *non-disturbed* assemblages. The copper/bronze artifacts in Graves 52, 57, and 62 graves indicate that there may have been something special about these individuals to warrant rare artifacts like these. However, this alone does not explain why these graves were targeted to be opened. It is therefore, likely that there was another reason, known to the disturbers but not visible to us, that caused them to select these particular graves for disturbance.

6.4 Volume of Stones

One additional aspect of grave architecture that is useful to discuss is the overall volume of stones used in grave construction. It is important to highlight the fact that the *extensively* disturbed graves appear to have had larger stone volumes than the other three categories of grave condition (Table 15, Figure 29). According to these data the stone volumes increase from 0.96 m^3 in the *inconclusive* graves, to 1.04 m^3 in the *non-disturbed*, to 1.09 m^3 in the *moderately disturbed*, and finally 1.53 m^3 in the *extensively disturbed* graves which was by far the largest stone volume of all the graves.

It is evident that the extensively disturbed graves have larger stone volumes than the other three categories. What are the implications of larger grave cairns? I return to this topic in Chapter 7 when I discuss status implications within the cemetery.

6.5 Skull Manipulation

Upon further examination it appears that the heads received special attention at KN XIV. Of the 83 individuals recovered from the cemetery 18 (22.0%) did not have a skull (B 21, 24, 37.3, 41, 61, 71, 73, 75, 76, 78, 79, 81, 82, 83, 84, 85, 86, 87). Some of the missing skulls may be attributed to poor preservation (for example B 41). However, the large percentage of missing skulls suggests that the absence of heads was not caused by natural taphonomic factors. This hypothesis is strengthened by the presence of burials that have the majority of the post-cranial remains articulated and complete despite the fact that the skull is absent (B 24, 71, 86, 87) (Figure 30). In all of these cases there is enough space between the remains of the clavicles and the west end of the pit to accommodate the head so it is likely the skull was attached or at least included with the burial at the time of initial interment. In addition, as noted, there were the 5 burials that had teeth or tooth fragments found in the grave but no other skull remains (B 71, 73, 81, 82, 86). This means that the heads were, most likely, present in these graves for some time after interment (long enough for a number of teeth to fall out) and then the heads were removed.

Of the 18 individuals missing their skulls; 2 (11.1%) were identified as possible males, however, sex could not be determined for the other 16 (88.9%) burials (Table 16). Furthermore, 2 (11.1%) individuals missing their heads were under the age of 15 years, 1 (5.6%) was in the age group 16–20 years, 2 (11.1%) were in the age group of 20–35 years, 2 (11.1%) were in the age group 35–50 years, 10 (55.6%) were in the broad age category of over 20 years, and age could not be determined for 1 (5.6%) individual (Table 17). Overall, 3 (16.7%) individuals missing their skulls were under the age of 20 years, 15 (83.3%) were over the age of 20, and no individuals over the age of 50 years were missing their skulls. If, in fact, missing heads are associated with grave disturbance these data support the hypothesis that the disturbers are targeting the graves of individuals over the age of 20 and younger than 50.

In each of these cases there was a disrupted paving stone distribution on the surface with noticeable openings in the west end of the surface structure and grave pit. Of the 18 graves containing individuals missing their skulls, 1 (5.6%) was *non-disturbed,* 10 (55.6%) were *moderately disturbed*, 5 (27.8%) were *extensively* *disturbed*, and 2 (11.1%) were *inconclusive*. These patterns strongly indicate that missing skulls are associated with disturbance activities at the cemetery.

Absent skulls are not the only interesting pattern regarding head treatment at KN XIV. It has already been discussed that there were 4 interments that had a mandible but no cranium (B 42, 58.2, 74, 77) and 1 individual that had a cranium and no mandible (B 72). This evidence suggests that in some graves the entire skull did not need to be removed, but taking either the cranium or mandible was sufficient.

Of the burials missing either their cranium or mandible, 2 (40.0%) were males and the other 3 (60.0%) were undetermined (Table 16). In addition, 1 (20.0%) of these burials was under the age 15 years, 1 (20.0%) was 20–35, 1 (20.0%) was 35–50, 1 (20.0%) was over 50 years, and 1 (20.0%) was placed in the broad category of 20+ years (Table 17). It appears as though the age of these individuals is spread rather evenly though all the age groups.

Of the five graves that contain burials with the cranium separated from the mandible, 1 (20.0%) is classified as *non-disturbed*, 1 (20.0%) was considered *moderately disturbed*, 1 (20.0%) is believed to be *extensively disturbed*, and 2 (40.0%) were determined to be *inconclusive*. Therefore, disarticulation may be linked to cultural disturbance but it is not a clear relationship.

In addition, there were 4 burials where the skulls were present but moved out of anatomical position (B 16, 38, 44, 51). In these cases the skulls were typically recovered from the upper chest region, usually flipped on their side or found upside down. It is possible that the heads were dislodged by animals or rolled out of position but this would be very difficult if hundreds of stones were placed directly on top of the bodies when the dead were interred (Drouin 2005).

Of the individuals with skulls present but moved out of anatomical position, 3 (75.0%) were males and 1 (25.0%) was undetermined (Table 16). Furthermore, 1 (25.0%) was under the age of 15, 1 (25.0%) was in the age group 16–20, and 2 (50.0%) were 35–50 (Table 17). All the graves that display this pattern of skull dislocation had relatively intact grave architecture and are classified as *inconclusive*.

Lastly, it is important to mention that there were two graves (G 59 and 80) that were associated with extra cranial material. In both of these cases there was a relatively complete individual (B 59.2, 80.2) lying in the grave and a second individual (B 59.1, 80.1) consisting only of a cranium and some associated teeth lying above or near the initial interment. Burial 59.1 was located above Burial 59.2, around 0.25 m below the modern surface. Burial 80.1 was located around 75 cm west and 40 cm north of the west end of the grave pit containing Burial 80.2 and 5 to 10 cm below the modern surface. Although, it could be argued that Burial 80.1 is not associated with Grave 80.2 similar radiocarbon dates for both burials supports the idea that they were interred either together, or close to the same time.

Grave 59 had relatively intact architecture and was considered *inconclusive*, while Grave 80 had more disrupted architecture and was determined to be *moderately disturbed*. It is possible that in the case of Grave 80 the extra cranium was added to the grave at the time of disturbance. However, it is impossible to tell for sure. Regardless of how the skulls came to be in the graves, considering the perceived importance of skulls at KN XIV it is interesting to find two extra skulls in these graves.

6.6 Multiple Burials

From the discussion about age at death and disturbance, it is apparent that disturbance activities were predominantly focused on individuals older than 20 but younger than 50. It was important to determine whether the number of individuals interred in each grave had any bearing on grave disturbance. At KN XIV there were 8 graves that held more than 1 interment; 2 graves with 3 individuals (G 27, 37) and 6 graves with 2 individuals (G 35, 36, 57, 58, 59, 62).

Four of these graves (G 27, 35, 37, 58) had consistent and intact grave architecture. All 10 individuals recovered from these 4 graves were articulated and relatively complete, except for Burial 37.3, which was only comprised of 4 neonatal teeth.

Conversely, there were 2 double burial graves that displayed signs of disturbance (G 57 and 62). The surface structures and pits of both graves were relatively disrupted and contained open areas. The remains of all four individuals were quite fragmented, somewhat disarticulated with missing elements, and heavily charred. It should be noted that, although fragmented and charred, the skulls were present for all four interments.

Lastly, there were 2 graves (G 36, 59) that displayed contradictory patterns regarding grave disturbance in that the architecture of both graves was intact from the surface to the burial level, however, the skeletal remains were somewhat disrupted.

Overall, of the 8 multiple interment graves 4 (50.0%) are considered to be *non-disturbed* (G 27, 35, 37, 58), 1 (12.5%) was determined to be *moderately disturbed* (G 57), 1 (12.5%) is classified as *extensively disturbed* (G 62), and 2 (25.0%) were defined as *inconclusive* (G 36, 59). This evidence seems to indicate that multiple graves were not specifically targeted for cultural disturbance.

6.7 Fire

Extensive evidence of fire was identified in many graves at KN XIV. Weitzel (2005) has conducted a thorough analysis into the use of fire at the cemetery, and how it relates to the taphonomy of the burials. This part of my analysis focuses on the association of charred skeletal remains and cultural disturbance.

At KN XIV there were 18 (25.0%) graves that displayed evidence of fire on their skeletal remains (Table 2). Within those 18 graves 20 individuals exhibited charring (Table 2), so that almost one-quarter of all of the burials in the cemetery were affected by fire. The effect of the fire ranged from minimal localized charring to intensive charring of entire skeletons.

There are 7 burials in the cemetery that demonstrate localized charring to the skulls and parts of the upper body (B 9, 29, 37.1, 37.2, 38, 65, 66). In these cases the skeletal remains, charred and uncharred, were in relative articulation and were very complete. Two exceptions to this pattern were Burials 38 and 65. Burial 38, a male between the ages of 35–50, had a dislocated skull. Burial 65 was a 5 to 6 year old child that suffered extensive deterioration of the skeletal remains, but the elements that were present were found in articulation. In all cases the skulls were charred but present. The architecture of each of these 6 graves was intact from the surface to the burial level.

Taking into account the intact architecture, the presence of the skulls, and the lack of visible disruption to the burials, 5 of these graves have been designated *non-disturbed* (G 9, 29, 37, 65, 66) and 1 has been labelled *inconclusive* (G 38). Therefore, it seems likely that in these cases fire was not associated with cultural disturbance.

There were three other burials that exhibited the effects of fire and were probably not disturbed. Burial 25 was only represented by the bones of the upper body and most of these bones (the cranium, superior torso, and right arm bones) were heavily charred. Burial 28 experienced extensive charring to the cranium and a number of skeletal elements positioned near the cranium. Burial 34 was very interesting in that the only skeletal element that displayed charring was the right patella. In all three cases the architecture was intact, the skulls were present, and the grave condition has been designated *non-disturbed*.

There were two cases (B 43, 54) that displayed extensive charring to almost all of the skeletal elements in their respective pits. Although these two burials were very charred their skeletal elements were located in relative anatomical position. There was no overt sign of missing elements or disruption to the burial and in both cases the skull was present. It should be noted that the architecture was slightly more disrupted than the burials noted above. Both graves have been classified as *inconclusive*.

Six other graves contained burials that were similar to Burials 43 and 54 in that most of the skeletal elements were heavily charred (B 24, 41, 52, 57.1, 57.2, 62.1, 62.2, 82). In these cases, however, the burials exhibited signs of disarticulation and missing elements. Other than Burial 41, all of these graves had an uneven, inconsistent distribution of stones both on the surface and in the grave pit. Burial 24, for example, had the charring localized to the left os coxae and the proximal end of the left femur. There was a circular opening in the surface structure, and the stones were denser in the east end of the pit. The skull was absent but the rest of the body was in anatomical position. Therefore, in all likelihood, this burial was culturally disturbed. If, as postulated, disrupted architecture, disarticulation, and missing elements are all associated with cultural disturbance it is possible that in these cases fire was involved in the disturbance activities. Of these 6 graves 2 were classified as *moderately disturbed* (G 24, 57), 3 were defined as *extensively disturbed* (G 52, 62, 82), while 1 was designated *inconclusive* (G 41).

To sum up, of the 18 graves affected by fire 7 (38.9%) were considered to be *non-disturbed*, 2 (11.1%) were classified as *moderately disturbed*, 3 (16.7%) were found to be *extensively disturbed*, and 5 (27.8%) are classified as *inconclusive*. This evidence indicates that the use of fire is not directly associated with cultural disturbance.

Chapter 7: Conclusion

7.1 Grave Categories

The approach used to analyze the phenomenon of disturbance at KN XIV was to examine each grave individually and then, based on the effects of disturbance on the grave architecture and skeletal remains, divide the graves into four specific categories: *non-disturbed*, *moderately disturbed, extensively disturbed*, and *inconclusive*. This division allowed for the analysis of these independent categories of disturbance with dependent mortuary variables such as grave goods, use of fire, and spatial data. Below I have summarized the principal characteristics of each category.

7.1.1 Non- Disturbed

The *non-disturbed* graves were predominantly located in the west and center of KN XIV. None were found in the eastern part of the cemetery. The surface structures tended to display a relatively consistent pattern with regard to stone size, shape, placement and distribution. They also exhibited a high level of integrity and a compact arrangement of stones. The surface structure areas averaged 9.47 m^2, which is roughly one third the area of the disturbed graves' paving distributions (26.96 m^2 for the *moderately disturbed* graves and 29.15 m^2 for the *extensively disturbed* graves). Likewise, the average cairn volume size for the *non-disturbed* graves was only 1.04 m^3 which is slightly smaller than the average for cemetery (1.16 m^3) and considerably smaller than the cairn volume average of the *extensively disturbed* graves (1.53 m^3).

The grave pits of the *non-disturbed* graves contained stones of consistent size, shape, placement and distribution. In addition, the boundaries of the pit were predominately intact. Within the pit, there were a relatively high number of stones packed closely together.

These *non-disturbed* graves contained individuals that were predominantly complete and articulated. Any loss or disruption of the skeletal material can, most likely, be attributed to natural taphonomic processes such as animal activity or disintegration of the bones over time. The demographic data indicate that all age groups were found within this category of graves. However, a large percentage (55.6%) of the child burials (<15 years) and the highest proportion of people over the age of 50 years (71.4%) were located in the *non-disturbed* graves.

Lastly, the *non-disturbed* graves had a much higher proportion of kaolinite beads (57.5%) and red deer teeth pendants (54.4%) than all the other grave conditions combined. Conversely, there were much fewer flaked stone, ground stone, and animal bone/antler implemental grave goods in the *non-disturbed* graves than in the *moderately* and *extensively disturbed* graves. Only 14.4% of all implements were located in *non-disturbed* graves compared to 27.3% and 55.8% for the *moderately* and *extensively disturbed* graves, respectively.

7.1.2 Moderately Disturbed

The *moderately disturbed* graves differed from the *non-disturbed* graves in that they were located primarily in the eastern part of KN XIV. Although these graves are described as *moderately disturbed,* the surface and pit structure of these graves tended to display *major* pattern disruptions with regard to stone size, shape, placement and/or distribution. There was typically an uneven distribution of stones on the surface that included large openings and breaches located in the vicinity of the southwest end of the grave pit. The average area of the surface structures was 26.96 m², which is considerably larger than the *non-disturbed* graves (9.47 m²).

Many of the *moderately disturbed* graves had an uneven distribution of stones within the pit in that many of these graves that had a tightly packed east end and few or no stones in the west end. The boundaries of the pits tended to be somewhat disrupted and difficult to distinguish. The stone volumes of the *moderately disturbed* graves averaged 1.09 m³ which is somewhat larger than both the *non-disturbed* and *inconclusive* graves, but smaller than the *extensively disturbed* graves.

The primary reason that these graves are classified as *moderately disturbed* is that the skeletal remains of the individuals within these graves were fairly complete (50–75%). However, the majority of the individuals in these graves were missing notable skeletal elements from the upper body, especially the heads and the superior right side of the body and there is little chance these missing elements can be attributed to natural taphonomic processes. The remaining elements were, largely, situated in anatomical position, particularly the inferior skeletal elements (from the pelvis to the feet).

The vast majority (78.5%) of individuals in the *moderately disturbed* graves were adults over the age of 20 years. In fact, there were only 2 burials under the age of 20 within this category (one of which was interred in a multiple grave with an adult) and only one individual over the age of 50 years.

The artifact assemblage of the *moderately disturbed* graves included 27.3% of all implements recovered from the cemetery. These implements mainly consisted of arrowheads, bifaces, scrapers, and ground stone adzes and knives. A wide selection of ornaments was also recovered from these graves but they only made up 9.1% of the cemetery ornament artifact total.

7.1.3 Extensively Disturbed

Like the *moderately disturbed* graves, the *extensively disturbed* graves were located primarily in the eastern part of KN XIV. They were also similar to the *moderately disturbed* graves in that the surface and pit structures of these graves displayed major pattern disruptions with regard to stone size, shape, placement and/or distribution. There was typically an uneven distribution of stones on the surface that included large openings and breaches located in the vicinity of the southwest end of the grave pit. The average surface structure area for the *extensively disturbed* graves was 29.15 m^2 which is larger than every other category of grave condition.

The pit structures of the *extensively disturbed* graves had notable openings and often an uneven distribution of stones within the pit. For example, some graves had an intact, tightly packed east end and little or no stones in the west end. Furthermore, the boundaries of these pits tended to be disrupted and, at times, difficult to identify. The mean stone volume of the extensively disturbed graves is 1.53 m^3. This is a significant increase in size over the other categories of graves and, in fact, is close to 50% larger than the average cairn volume size of the *non-disturbed* graves.

The major difference between the *extensively* and *moderately disturbed* graves is that almost all of the skeletal remains within these graves were very incomplete (25% or less) and disrupted. Within the *extensively disturbed* graves there were only 2 identified individuals under the age of 20 years. One of these individuals was interred in a multiple grave with an adult and the other individual could have been as old as 19 years of age. Furthermore, no individuals over the age of 50 were located in the *extensively disturbed* graves. These patterns suggest that, similar to the *moderately disturbed* graves, subadult graves and adults over 50 years of age were not being selected for disturbance.

The *extensively disturbed* graves only contained 1.0% of all ornaments recovered from the cemetery. However, 55.8% of all implements were located in or near these graves. This included a large quantity and diversity of flaked stone, ground stone, and faunal implements.

7.1.4 Inconclusive

The inconclusive graves were located primarily in the center of the cemetery. The physical remains of the surface and pit structures in this category were predominantly intact and very similar to the grave architecture of the *non-disturbed* graves. The average surface structure distribution was 9.65 m² which is also similar to the *non-disturbed* graves.

The individuals within the *inconclusive* graves ranged from either very incomplete and disarticulated (<25%) to fairly complete and articulated (>75%). The main distinction between this group and the previous groups is that the architecture and/or the burials within this grave condition displayed some possible indicators of cultural disturbance. These indicators include small openings in the architecture and minor disruptions to the skeletal remains. In many cases it was difficult to determine whether the skeletal remains had been disrupted by humans, animals, or simply deteriorated away. *Inconclusive* graves contained many individuals under the age of 20. In fact 47.4% of all individuals recovered from inconclusive graves were subadults.

The artifact assemblages of the *inconclusive* graves consisted almost entirely of ornamental artifacts (kaolinite beads and red deer canine pendants). In total 32.7% of all ornaments and 49.0% of all of the pottery recovered from the cemetery were found in these graves. Conversely, only 2.5% of all implements were located in the *inconclusive* graves. In this respect the artifact assemblages of the *inconclusive* graves were more similar to the *non-disturbed* graves than the *moderately* or *extensively disturbed* graves.

7.2 Discussion and Conclusions

The purpose of this project was to learn more about grave disturbance and human behaviour through an analysis of a Bronze Age hunter-gatherer cemetery. In the process I attempted to identify and describe the primary characteristics of the grave disturbances at KN XIV and identify patterns in the disturbance data. Throughout the analysis the argument was made that disturbed graves have the potential to offer important, archaeologically significant, data and should not be removed from the mortuary study.

Regarding the grave condition categories the differences between the *moderately* and *extensively disturbed* graves are probably more negligible than initially suspected. Evidence from the architecture, artifact assemblages, and location of these graves in the cemetery indicate that these two grave conditions were quite analogous and, in fact, very homologous. The only notable difference between the two categories was the amount of disruption to the human remains. It seems plausible that the same disturbance activities were affecting all of the graves in these two categories in the same manner, just not to the same degree.

Likewise, the *non-disturbed* and *inconclusive* graves shared many of the same characteristics. Both categories of graves had artifact assemblages that were comprised of a high percentage of ornamental artifacts and a low number of implements. Additionally, the similar location of these graves in the cemetery, the fact that their grave architecture displays comparable traits supports the idea that many of the *inconclusive* graves were, in fact, *non-disturbed*. It may be appropriate to evaluate each of the 18 inconclusive graves on a grave-by-grave basis and re-analyze the data, however, that goes beyond the scale of this project.

Patterns in the architecture and the skeletal remains were evident as outlined in description of the four grave conditions above. The circular openings in the disturbed graves were large and, seemingly, deliberate and it is plausible that they are the result of some form of intentional secondary mortuary ritual. Furthermore, evidence of openings in the southwest region of the surface structure and the lack of stones in the west end of the pit indicate that that the disturbers were deliberately targeting the western part of these graves. The effects of disturbance on the skeletal remains support this hypothesis. *Non-disturbed* burials were typically articulated and complete with any loss of skeletal material attributable to natural taphonomic factors. *Disturbed* burials, however, displayed focused attention to the skulls and upper bodies of the interred individuals. It seems likely that skulls, and possibly other skeletal elements, were deliberately removed from these graves at the time of disturbance.

Heads that are taken from the dead of another cultural group are often viewed as a trophy or prize (de Laguna 1933: 35). Heads could have been removed from the graves at KN XIV by people interested in collecting trophies; however, there are also examples in the literature of heads being removed for ritualistic purposes. Parker Pearson (1999:50-52), for example, reports that:

> Secondary rites appear to have been a major part of funerary practices in the British Neolithic, between 4200 and 3000 BC; bone bundles and disaggregated skeletal remains were placed in tombs, caves or other burial deposits. Certain parts of the skeleton were moved from one context to another. For example, skulls are under-represented in the chambered tomb at West Kennet in southern England, but are found in profusion in the nearby ceremonial causewayed enclosure of Windmill Hill.

As mentioned (see Chapter 2), Ian Kuijt noted the post-depositional removal of heads in the Levant region of the Mediterranean. In his case study, some of the reexcavated skulls were selected to be painted, plastered, and then made into masks. Others were used for rituals and eventually reburied by themselves or in groups (Kuijt 2001).

Closer to the Lake Baikal Region, Zaitseva (1996) mentions the presence of head cults in Siberia. She notes that various groups throughout Siberia buried bodies without the heads and/or buried heads separately from the post-cranial remains. This practice occurred both in antiquity and in modern times. Zaitseva (1996:1) points out that according to the Sel'kup people of Western Siberia "it was necessary to cut off the heads of shamans and those who died as a result of violence; then, the heads were boiled in a big cauldron and later were buried separately from the bodies."

The Glazkovo people that were living in the Cis-Baikal area were not sedentary agriculturalists, like the culture in Kuijt's analysis, nor do we have ethnographic information about their mortuary practices as in the case of the Sel'kup people. However, the secondary activity of reopening the grave and removing the head for additional mortuary rituals could certainly have been occurring at KN XIV. It is possible that the kin members of the dead were burying their relatives, allowing them to decompose and then opening some of the cairns to use the skulls for secondary ritual activity. It is also feasible that there may be a cache of skulls somewhere in the vicinity that was a focal point linking the dead with the living.

Patterns in the spatial data reveal that the majority of the disturbance activities occurred in the eastern area of KN XIV. The question is *why* these graves were selected for disturbance? At Oleni'ostrov O'Shea and Zvelebil's (1984) mortuary analysis demonstrated that there were two significantly different types of graves at the cemetery. Most individuals interred at Oleni'ostrov were laid flat and supine in relatively simple graves that did not require much effort to construct. Others were placed in shaft burials which were deemed 'special' because they required much more energy to build. The authors contend that the presence of two types of grave architecture signify that the people interred in the shaft burials had a higher degree of social status than the individuals in the southern cluster due to the extra energy devoted to building the shaft graves. Furthermore, they postulate that the discrepancies in mortuary treatment between the two types of graves were also reflected in the social system of the living culture.

Likewise, Tainter (1978: 125) argues that:

> Directionally, higher social rank of a deceased individual will correspond to greater amounts of corporate involvement and activity

> disruption, and this should result in the expenditure of greater amounts of energy in the interment ritual. Energy expenditure should in turn be reflected in such features of burial as size and elaborateness of the interment facility, method of handling and disposal of the corpse, and the nature of grave associations.

At KN XIV the cairn volumes of the *disturbed* graves were significantly larger than the *non-disturbed* and *inconclusive* graves. It would have required extra energy investment and/or a larger labour force to build the cairns for these graves. It is feasible that graves with larger cairns held individuals that had a different social role or special status within Glazkovo society.

Grave architecture was not the only mortuary dimension separating the *disturbed* features from the rest of graves. This study has clearly demonstrated that the majority of *disturbed* graves had artifact assemblages that were much 'richer' in quantity and quality of implements than the *non-disturbed* graves. These 'rich' assemblages, combined with the larger grave cairn volumes, support the hypothesis that the people interred in these graves had a higher socioeconomic status in relation to the rest of the people in the cemetery. Determining the degree of social differentiation at KN XIV is beyond the scope of this project, however a separate analysis on this subject should provide additional detail in this area.

As mentioned (Chapter 2) there are three major reasons people disturb graves; economic, political, and ritualistic. Nephrite adzes and copper/bronze artifacts are valuable to collectors and pot hunters today (Schulting 1995) and certainly would have been valuable at the time the graves were disturbed. However, as discussed, it is apparent that the graves at KN XIV were not being looted for material gains and there was likely another reason for their disturbance.

Political grave disturbance is a possibility. Arthur Saxe (1971) points out that certain groups have used cemeteries to assert their presence on the landscape and justify their access to local resources in the region. KN XIV would have been very visible to other groups in the region because of the cairns. It is feasible that the disturbance patterns observed in the cemetery are the result of an episode of desecration and/or vandalism by another group in Cis-Baikal area.

As noted, political disturbance is often violent and destructive. It may be targeted at a specific individual or a group of people, however the disturbance activity itself is typically random in form and results. I would argue that the deliberate, repetitive patterning of large openings in the southwest area of the surface structures and the seemingly intentional positioning of the stones around the openings indicates that this was not political disturbance.

Ritualistic grave disturbance often involves fulfilling obligations to the dead (and the living society) through post-depositional mortuary ceremonies (Kuijt 2001). The disturbance activities tend to follow a prescribed method and ritual by people who knew the individuals interred in the graves. These rituals are designed to honour the individual that has died and reaffirm the group's social unity in the process. The benefit to the people disturbing the graves is not to gain wealth or to denigrate another group of people but to strengthen the social cohesiveness of their people and complete social obligations to the dead.

Overall, the repetitive patterning of circular openings in the southwest end of the surface structure, the absence of skeletal elements (particularly the skulls), and the presence of 'rich' grave good assemblages in the disturbed graves all combine to support the concept that grave disturbance at KN XIV was motivated and undertaken for ritualistic purposes. People appear to have been re-opening specific graves after a prescribed amount of time (an interval long enough for the soft tissue to disintegrate) and using a prescribed method (always opening the graves from the southwest) to remove the skulls and possibly other skeletal elements for ritualistic purposes.

These post-interment rituals were not distributed equitably across the population of the cemetery but were focused on the graves of individuals between the ages of 20 and 50 years. It is quite likely that these individuals held a distinct socioeconomic status within Glazkovo society and repeated targeting of these implement rich graves indicates that the disturbers knew the individuals in these graves held this status.

7.3 Suggestions for Future Research

Mortuary analyses often exclude disturbed graves from their study (O'Shea 1984; Schulting 1995; Loendorf 2001). Disturbed graves need to be properly identified and interpreted but should not be excluded from the analysis. This research has demonstrated that disturbed graves can, in fact, offer revealing insight into past human behaviour.

On an inter-site scale it will be important to compare disturbance patterns found at KN XIV to other cemeteries in the Cis-Baikal region. It was noted that there is evidence of grave disturbance at other cemeteries in the Cis-Baikal including; Kurma XI and Burkhan Cape. Furthermore, Kharinsky and Sosnovskaya (2000) note that at Khadarta-IV, another mid-Holocene hunter-gatherer cemetery located approximately 15 km NE of KN XIV, grave disturbance, or looting as they refer to it, was occurring (Figure 1).

In 2003, the Baikal Archaeology Project excavated two of the remaining unexcavated graves at Khadarta-IV. One of the graves had a large circular opening in the surface structure. The superior skeletal elements, including the skull, were absent while the inferior elements (from the pelvis down) were articulated and complete. The grave good assemblage was extensive and elaborate including; bone and antler points, two nephrite adzes, flaked stone implements and an animal mandible. A cursory examination of this grave demonstrates just how similar it is to the disturbed graves KN XIV and supports the hypothesis that disturbance patterns witnessed at KN XIV are a region-wide phenomenon.

The approach utilized in this thesis to interpret grave disturbance may provide a useful template to analyze disturbance activities at these other cemeteries. The analyses, however, do not need to be limited to Eurasia. Intra and inter-site analyses throughout the world will increase our knowledge of hunter-gatherer mortuary rites, disturbance methods and objectives, and consequently hunter-gatherer culture and lifestyle.

Figure 1
Map of important Neolithic and Bronze Age archaeological sites in the Lake Baikal region

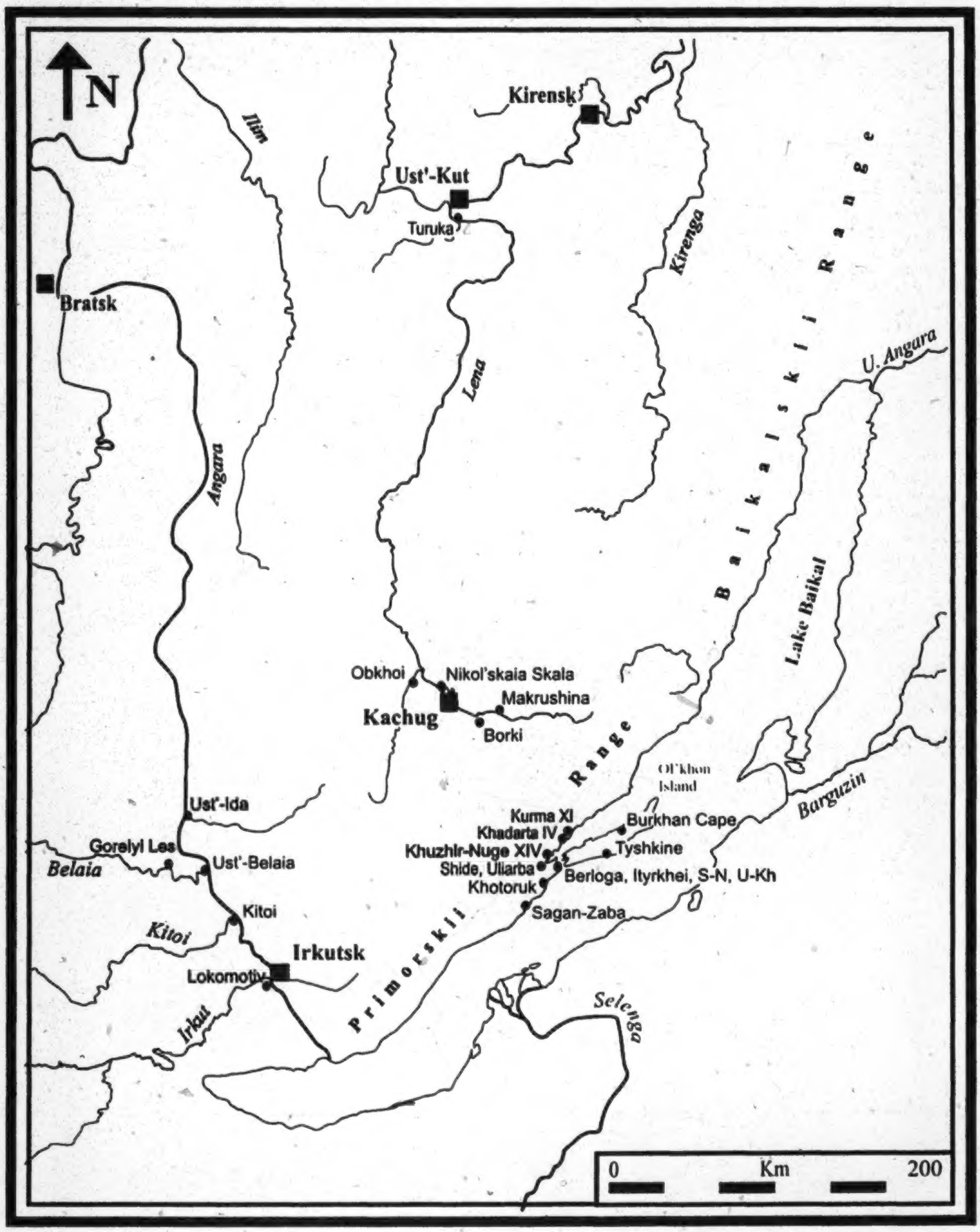
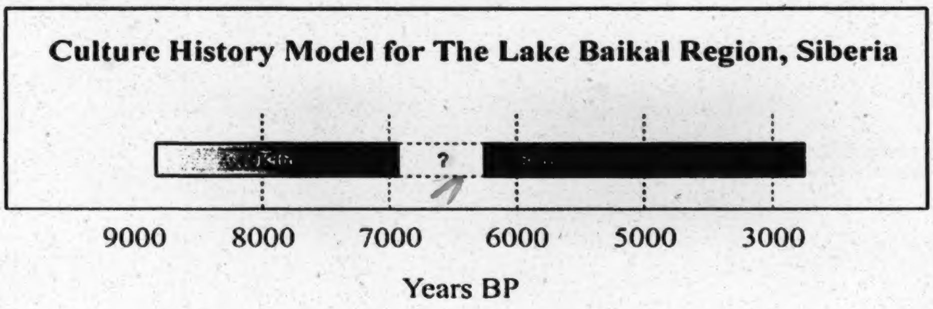

N
Kirensk
Ilim
Ust'-Kut
Turuka
Kirenga
Bratsk
Baikalskii Range
U. Angara
Lena
Angara
Lake Baikal
Obkhoi
Nikol'skaia Skala
Makrushina
Kachug
Borki
Range
Ol'khon Island
Ust'-Ida
Kurma XI
Khadarta IV
Burkhan Cape
Barguzin
Gorelyi Les
Khuzhir-Nuge XIV
Tyshkine
Belaia
Ust'-Belaia
Shide, Uliarba
Khotoruk
Berloga, Ityrkhei, S-N, U-Kh
Sagan-Zaba
Kitoi
Kitoi
Primorskii
Irkutsk
Lokomotiv
Irkut
Selenga
0
Km
200

Figure 2
Culture history model for the Cis-Baikal Neolithic and Bronze Age in radiocarbon years BP (after Weber 1995, Weber *et al.* 2002)



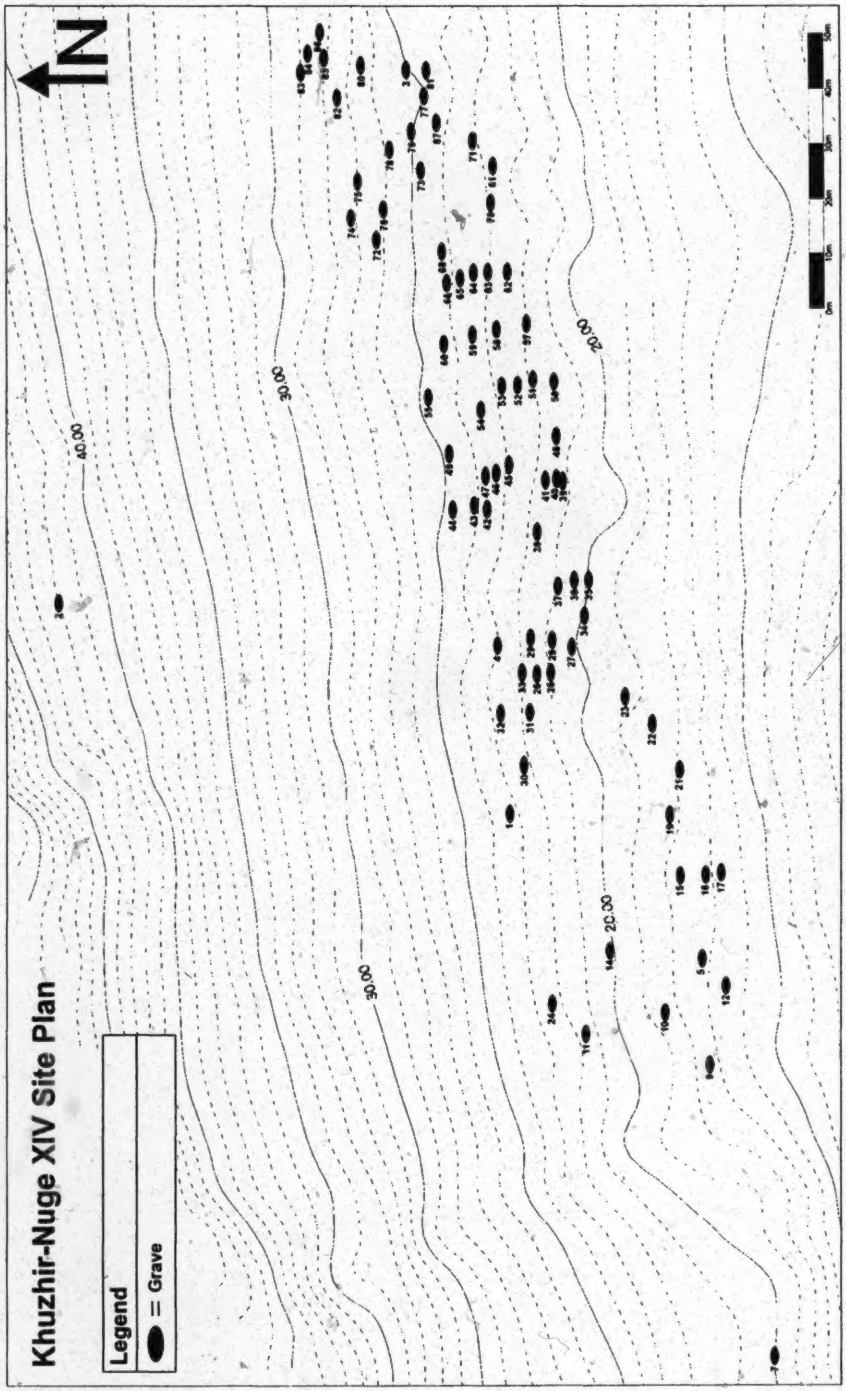

Khuzhir-Nuge XIV Site Plan
Legend
= Grave
N
40.00
30.00
30.00
20.00
20.00

Figure 3 Spatial distribution of graves

Figure 4

Grave 83. Associated grave stones

KH-N XIV
No. 83
LEVEL

Figure 5
Grave 68. Intact surface structure

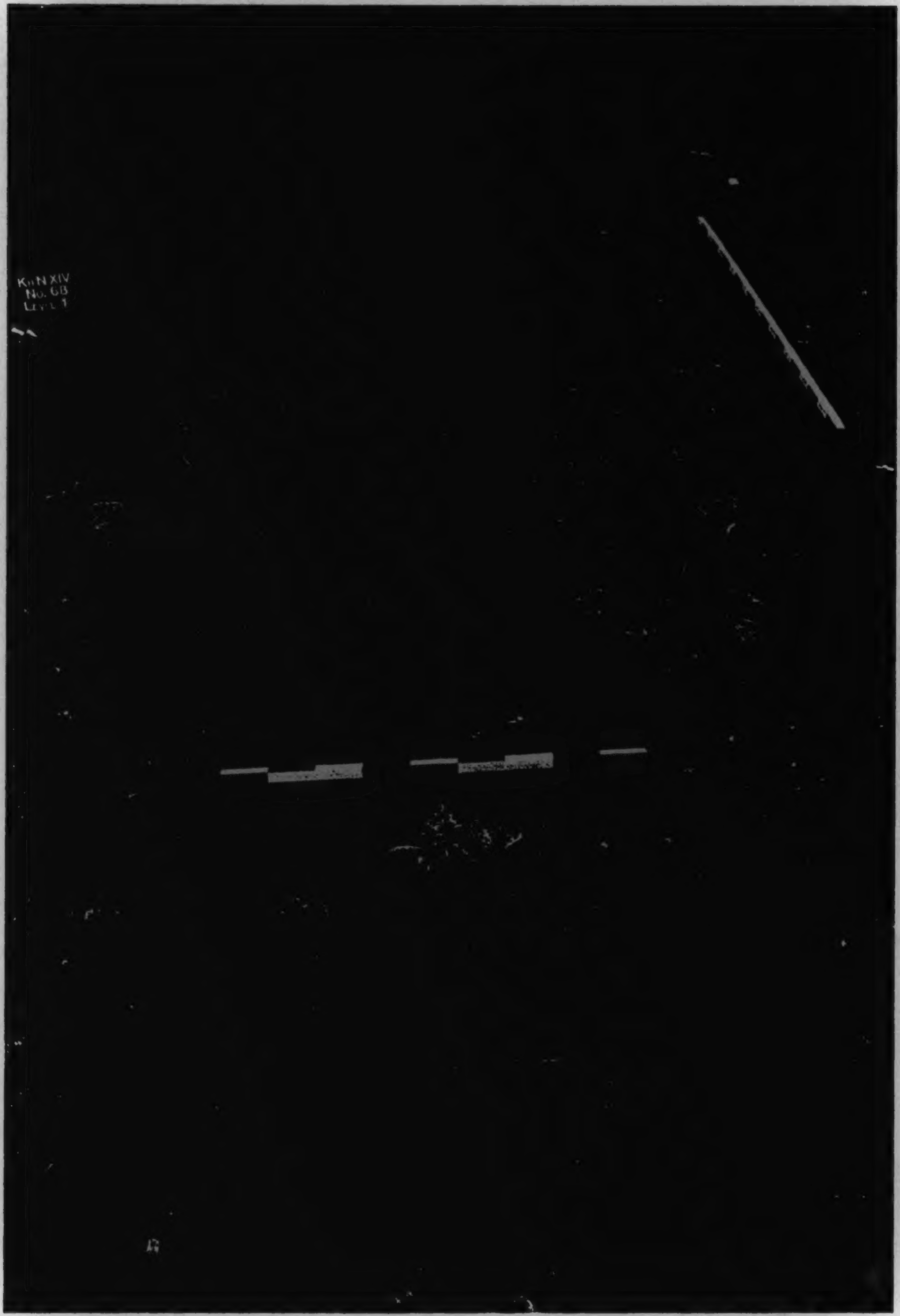

KuN XIV
No. 68
Level 1

Figure 6
Grave 74. Surface structure with large opening

KHN XIV
No. 74
LEVEL 1

Figure 7

Grave 72. Grave pit exhibiting uneven distribution of stones

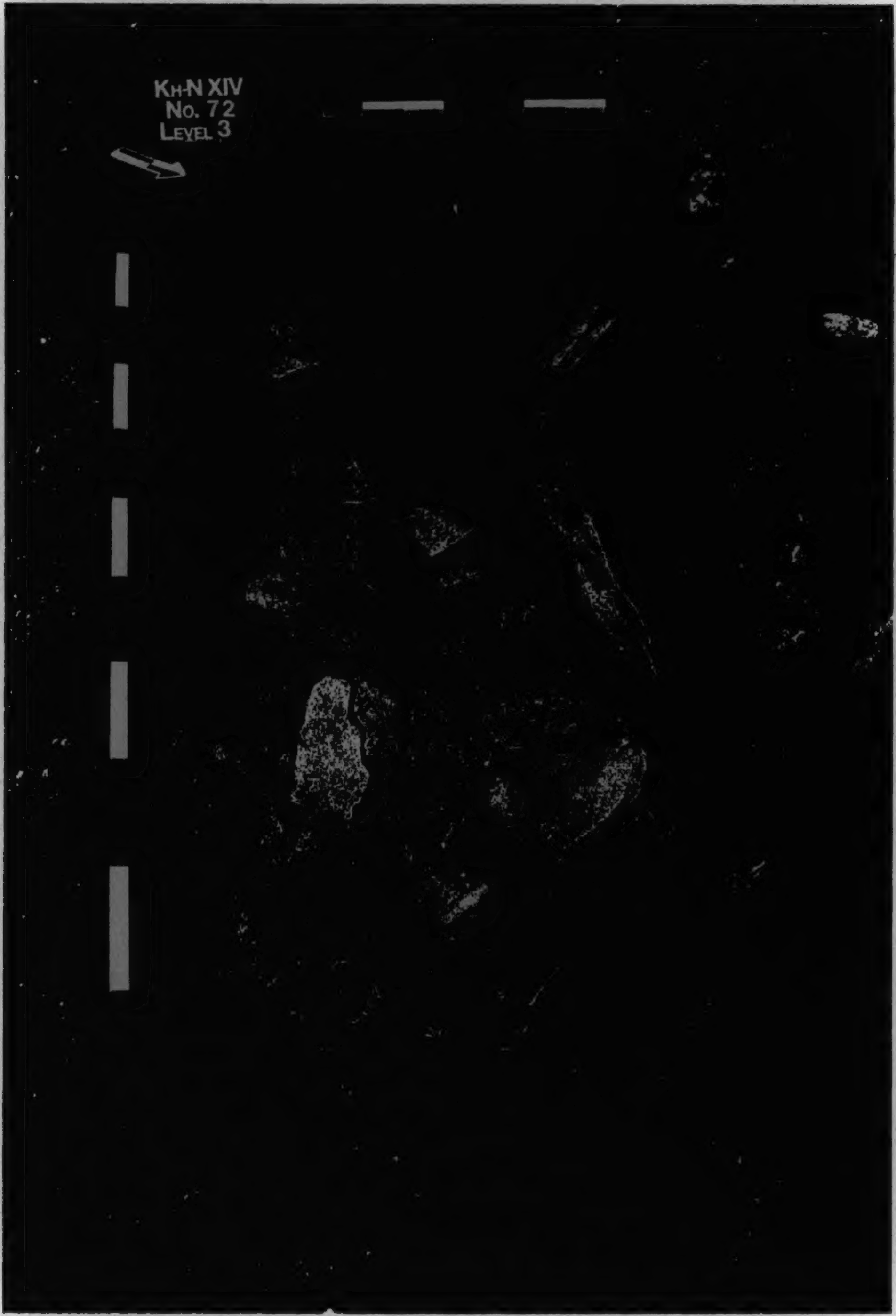

KH-N XIV
No. 72
LEVEL 3

Figure 8
Grave 46. Burial displaying non-disturbed skeletal remains

KH-N XIV
No. 46
LEVEL 6

Figure 9

Grave 73. Burial exhibiting disturbed superior right side of body and missing skull

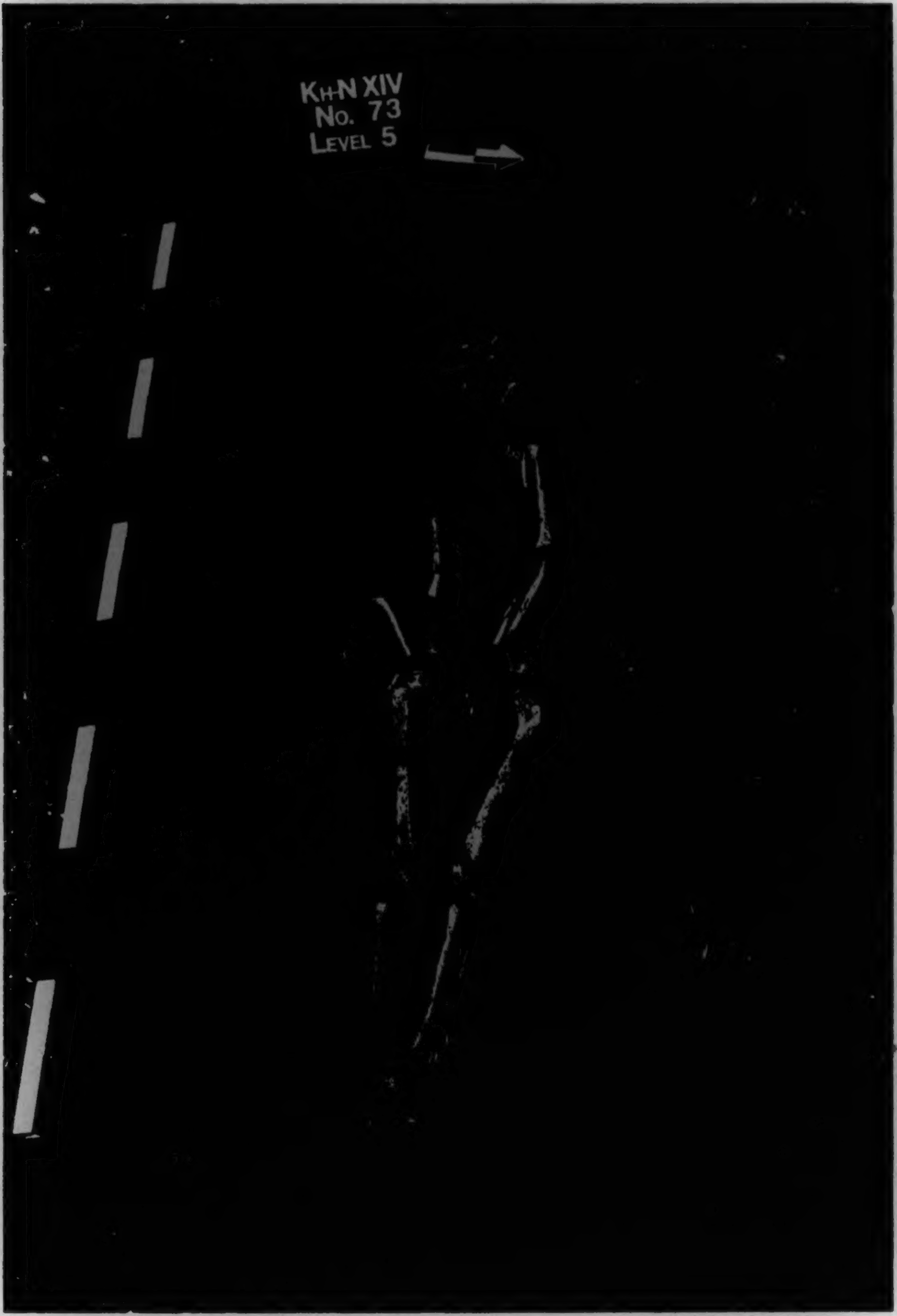

KH-N XIV
No. 73
LEVEL 5

Figure 10
Grave 74. Burial with lower legs articulated and covered by paving stone

K+N XIV
No. 74
Layer 4

Figure 11
Grave condition at KN XIV: A– raw numbers, B– percentage (see Table 7 for original data)

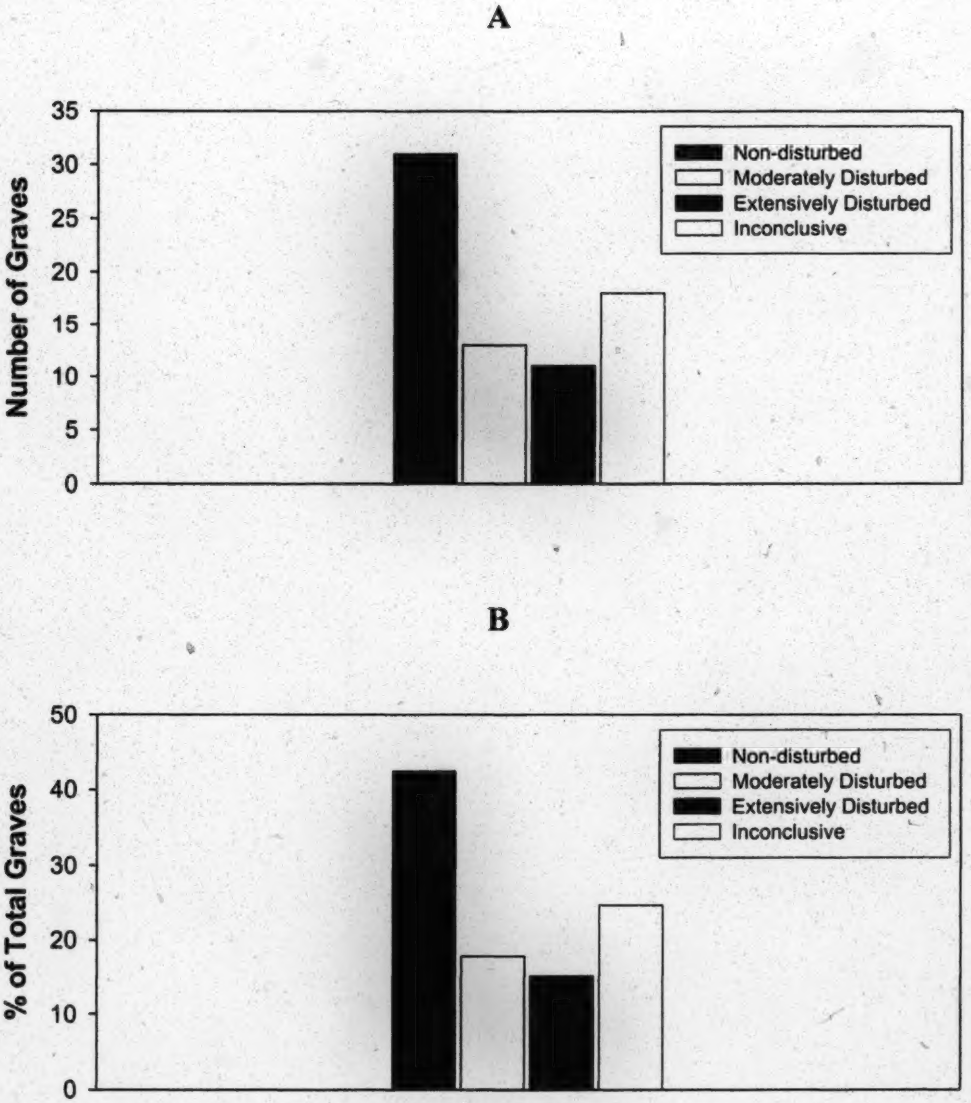


Figure 12
Prevalence of Kaolinite beads at KN XIV: A– raw numbers, B– percentage (see Table 8 for original data)

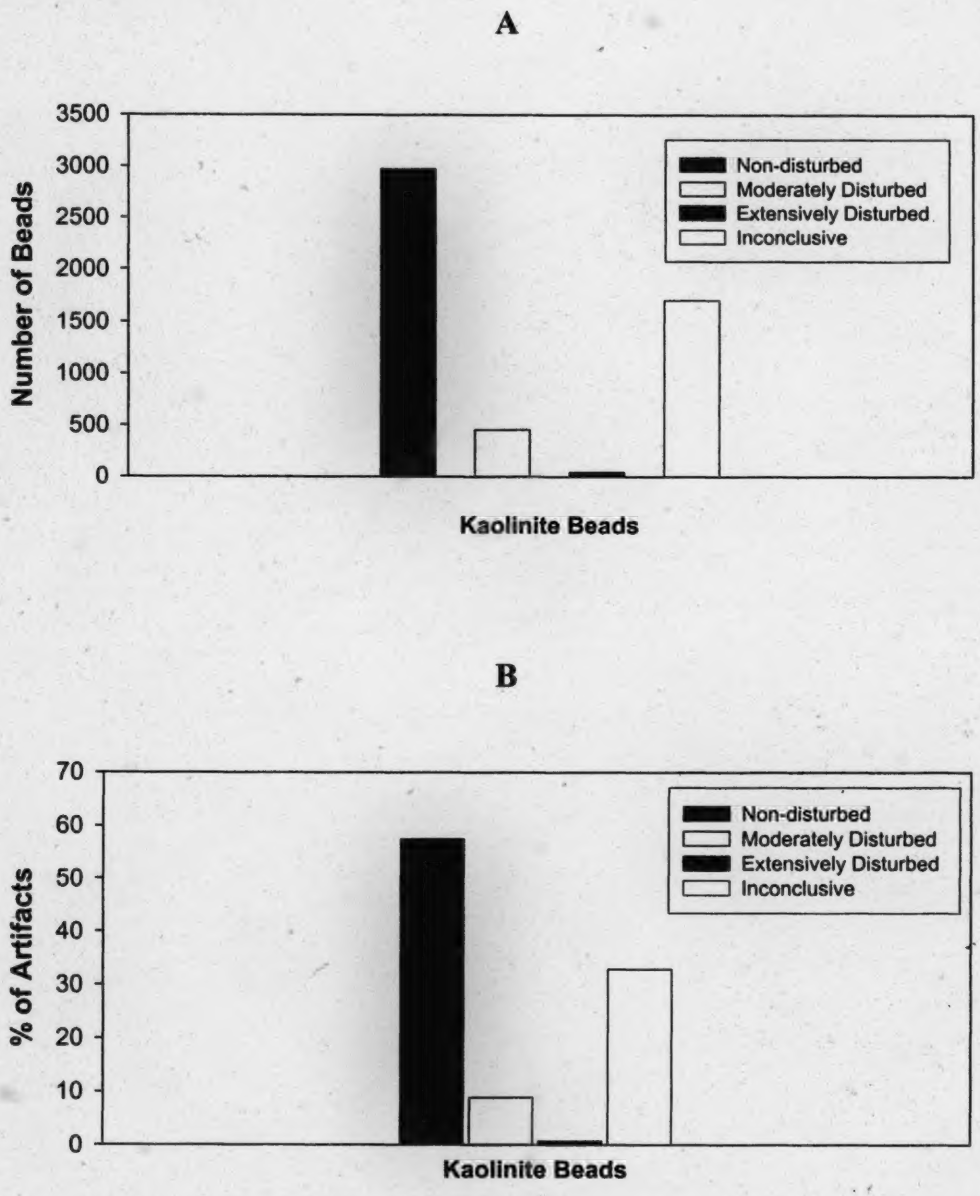


Figure 13
Prevalence of red deer canine pendants at KN XIV: A– raw numbers, B– percentage (see Table 8 for original data)

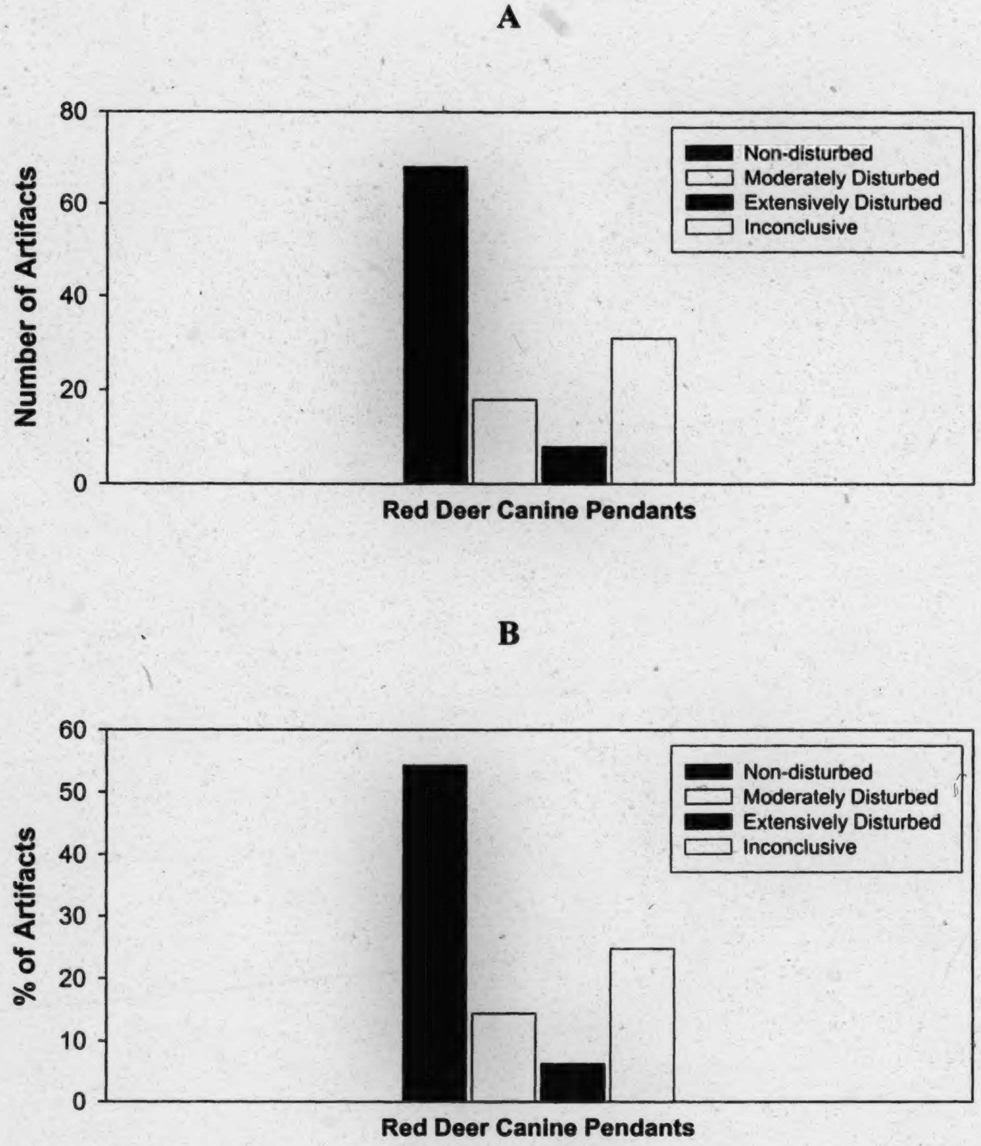
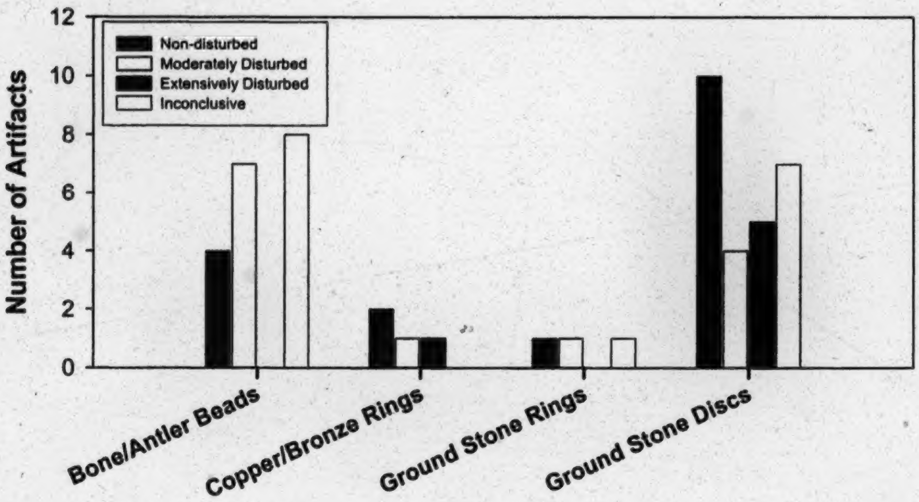


Figure 14
Prevalence of bone/antler beads, copper/bronze rings, ground stone rings, ground stone discs at KN XIV: A– raw numbers, B– percentage (see Table 8 for original data)

A



B

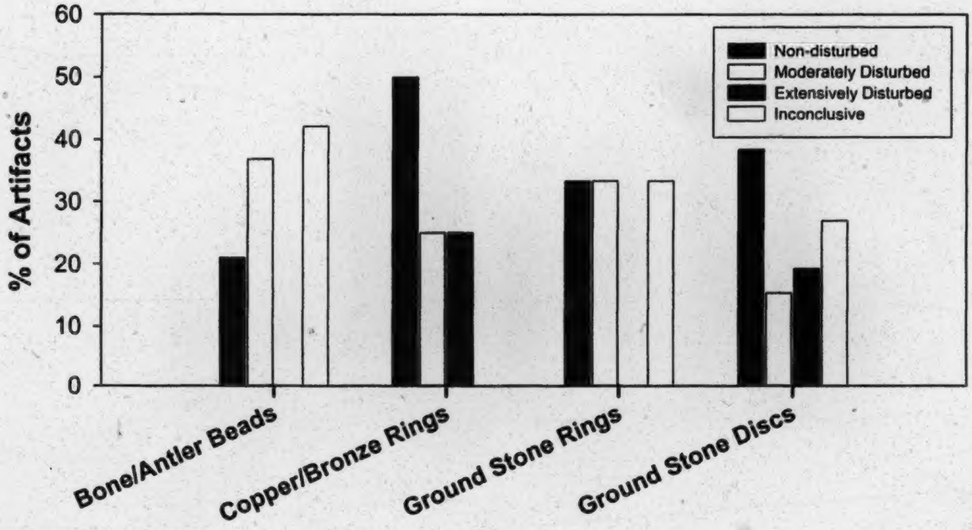


Figure 15

Prevalence of flaked stone arrowheads, bifaces, scrapers, blades, flakes, and inserts at KN XIV: A– raw numbers, B– percentage (see "all" column in Table 9 for original data)

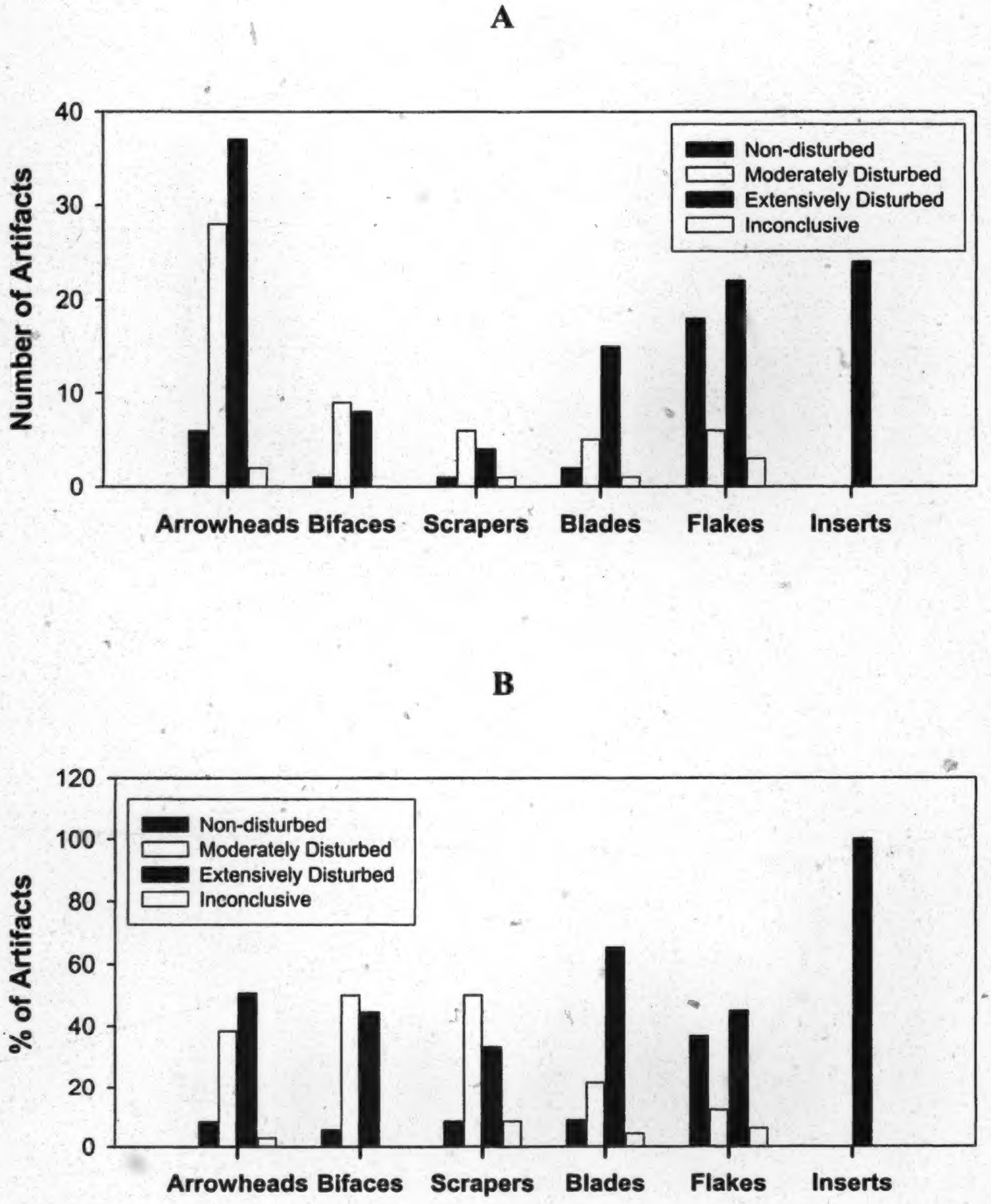


Figure 16
Prevalence of ground stone adzes, knives, and abraders at KN XIV: A– raw numbers, B– percentage (see "all" column in Table 10 for original data)

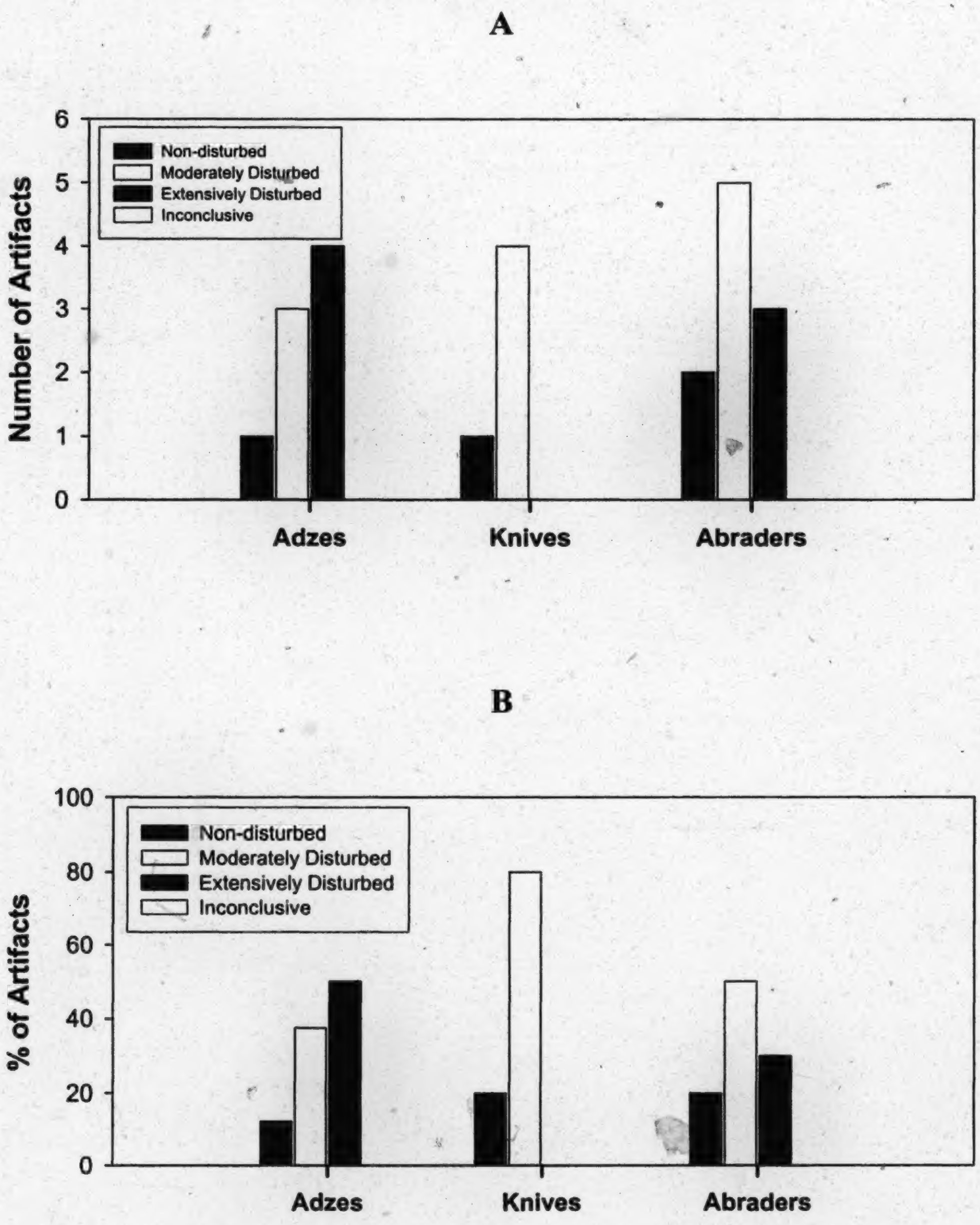


Figure 17
Prevalence of organic points, spoons, harpoons, fleshers, and fishhook shanks at KN XIV: A– raw numbers, B– percentage (see "all" column in Table 11 for original data)

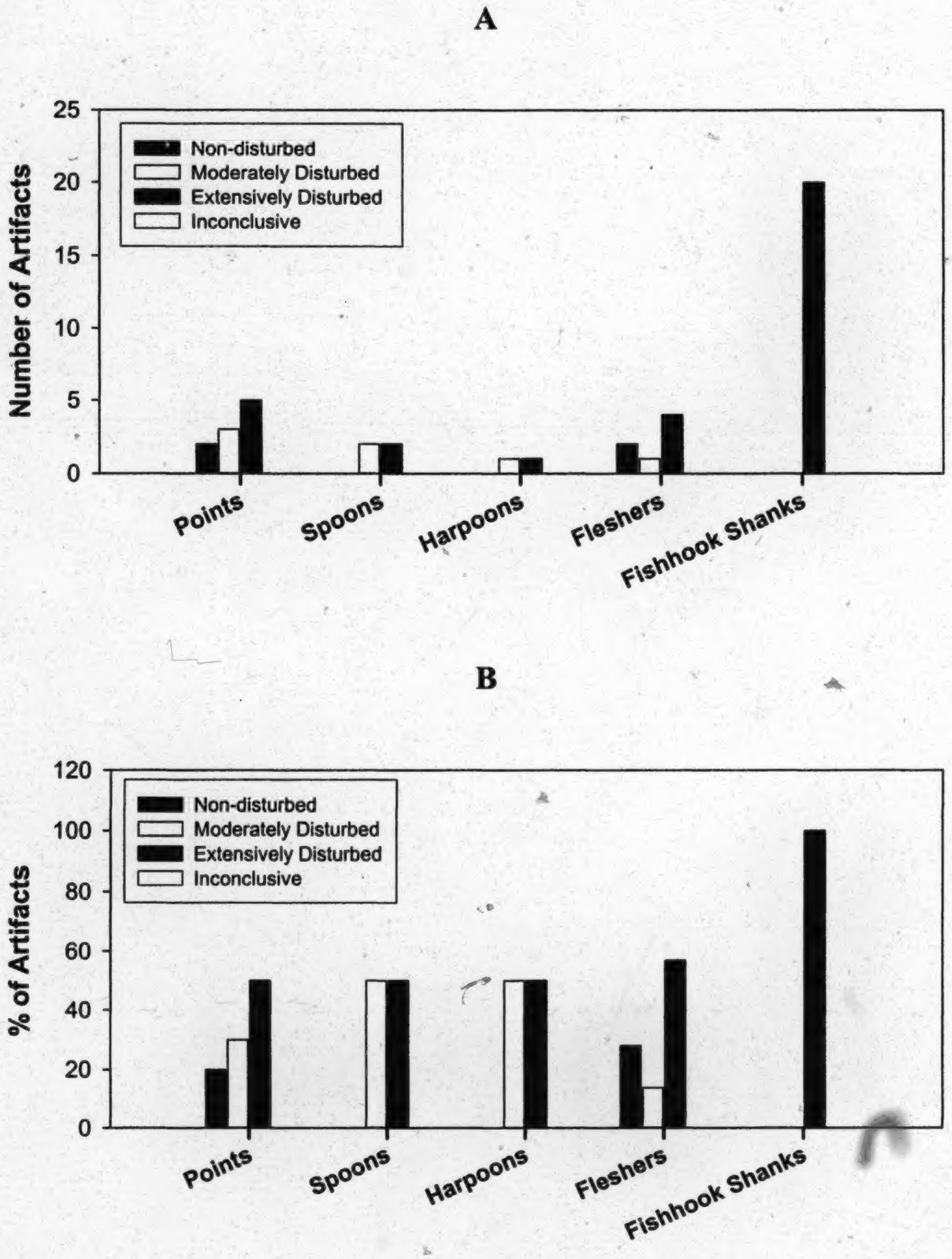


Figure 18
Pottery fragments at KN XIV: A– raw numbers, B– percentage (see "all" column in Table 12 for original data)

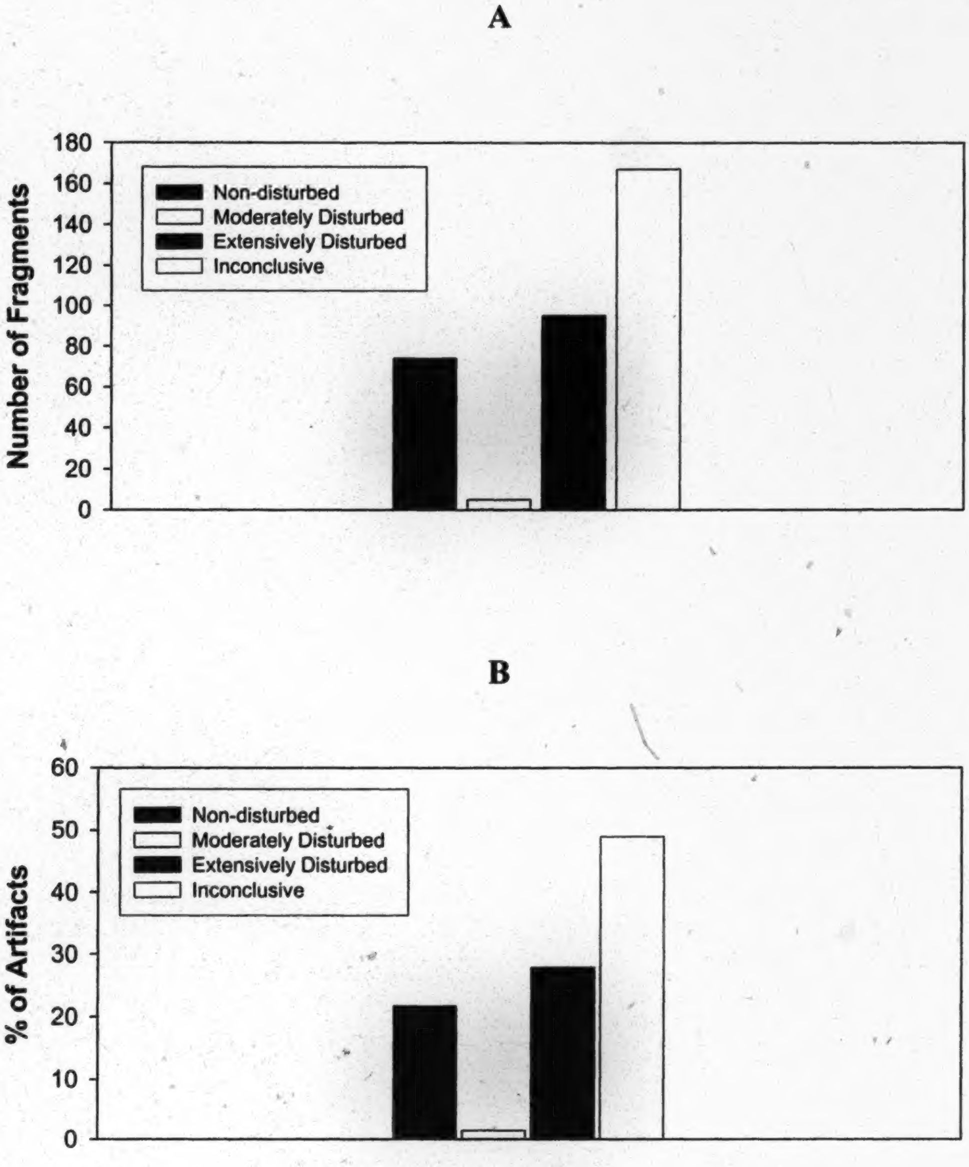


Figure 19
Grave 57. Kaolinite beads

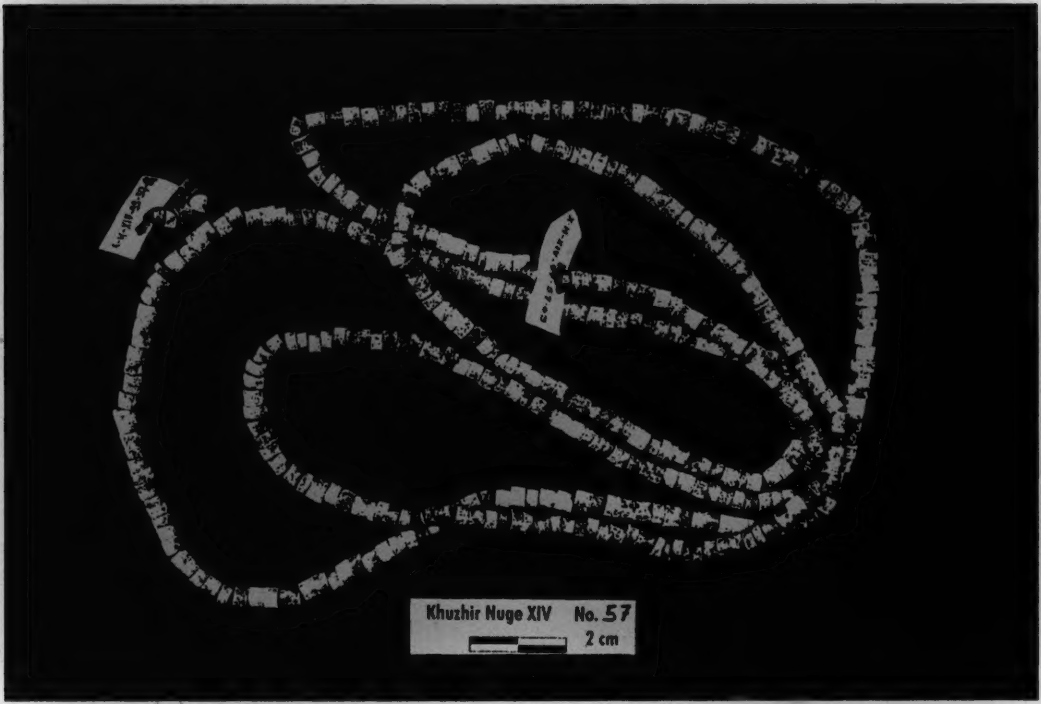

Khuzhir Nuge XIV No. 57
2 cm

Figure 20
Grave 86. Antler harpoon, antler point, and bone point

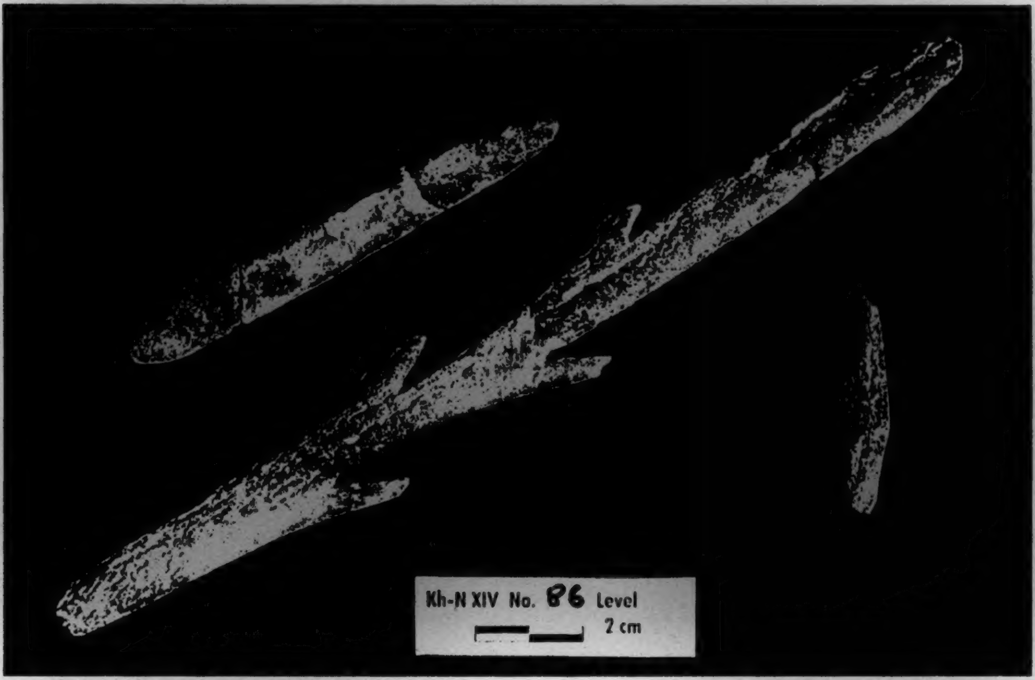

Kh-N XIV No. 86 Level
2 cm

Figure 21
Grave 1. Circular opening in surface structure (Kurma XI)

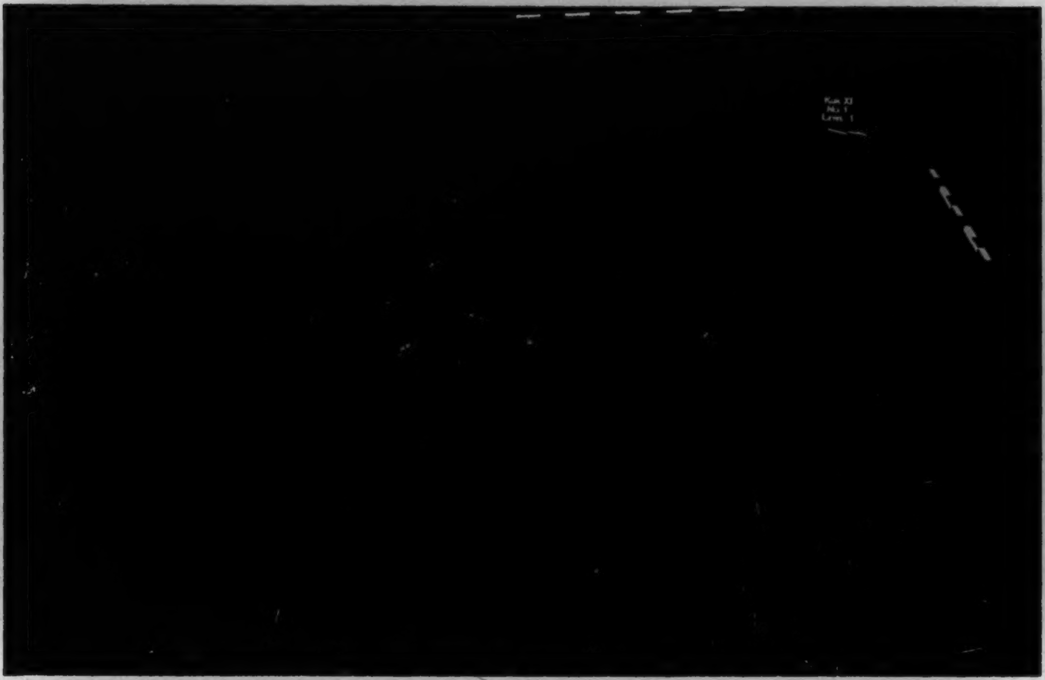


Figure 22
Grave 1. Uneven distribution of stones in grave pit (Kurma XI)

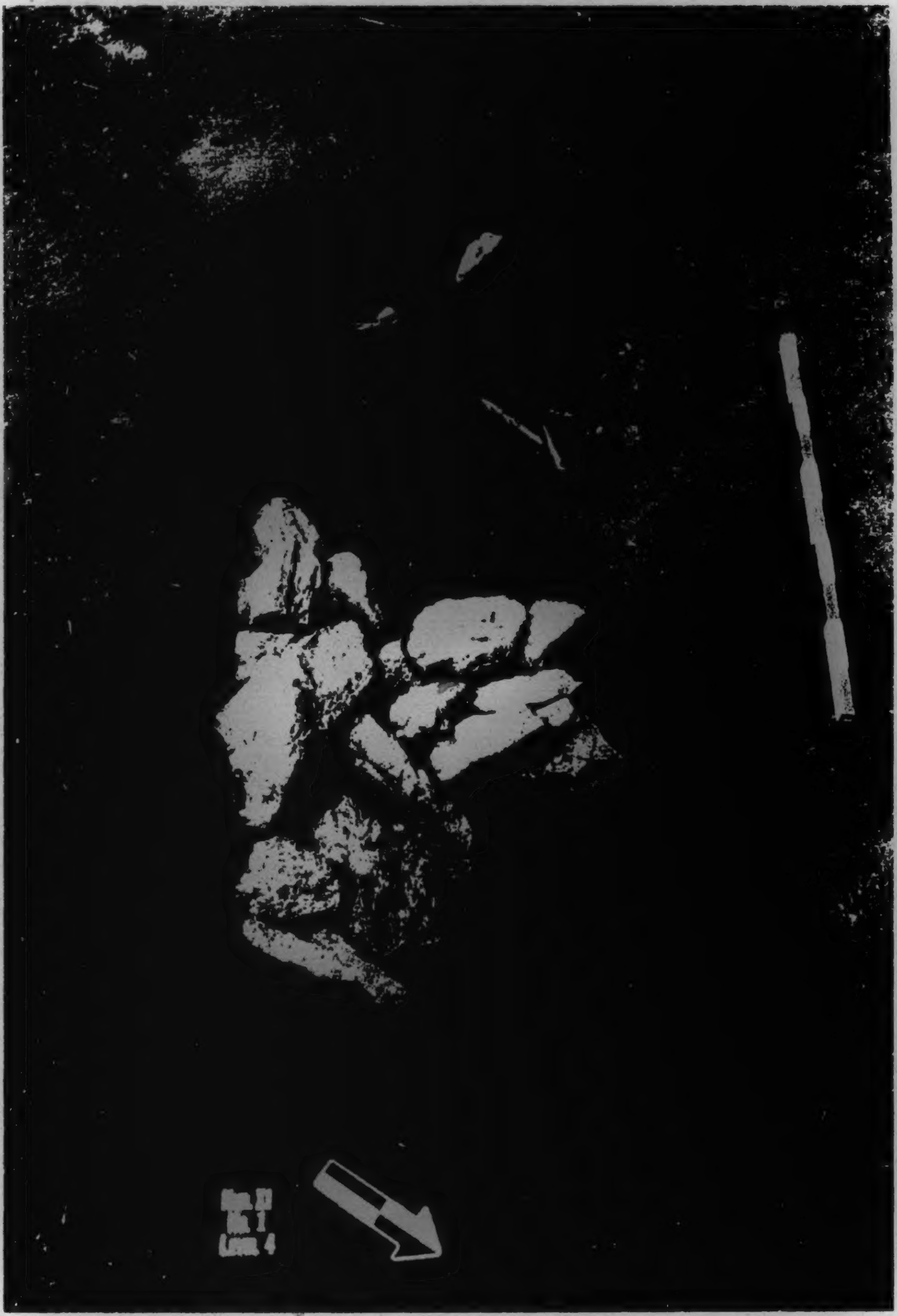


Figure 23
Grave 1. Copper medallion (Kurma XI)

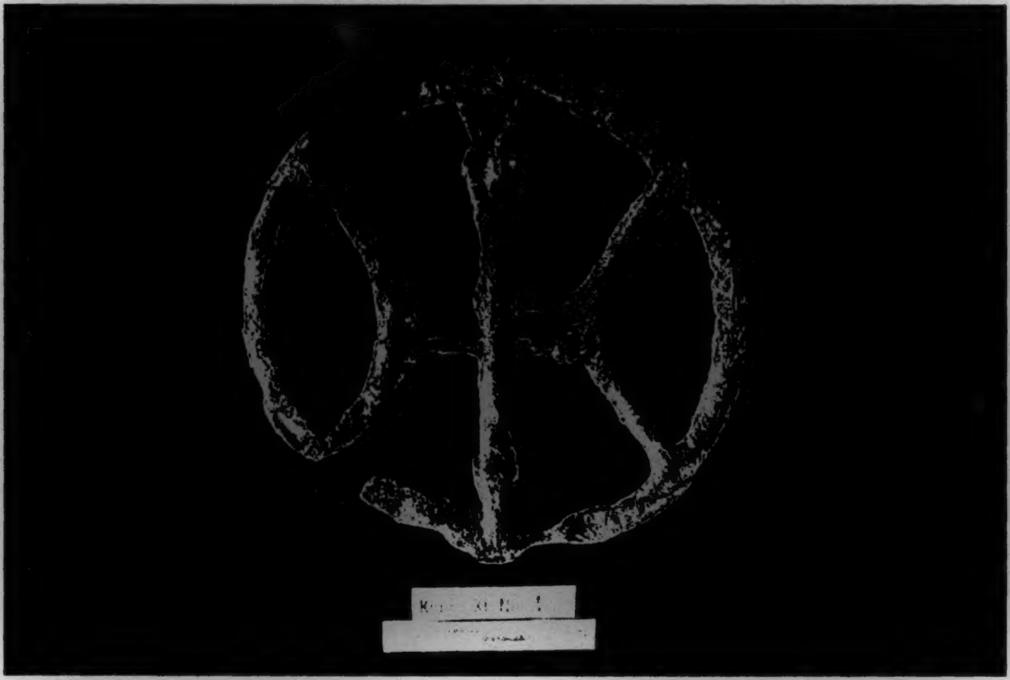


Figure 24

Grave condition at KN XIV and distribution of burials by sex (see Table 13 for original data)

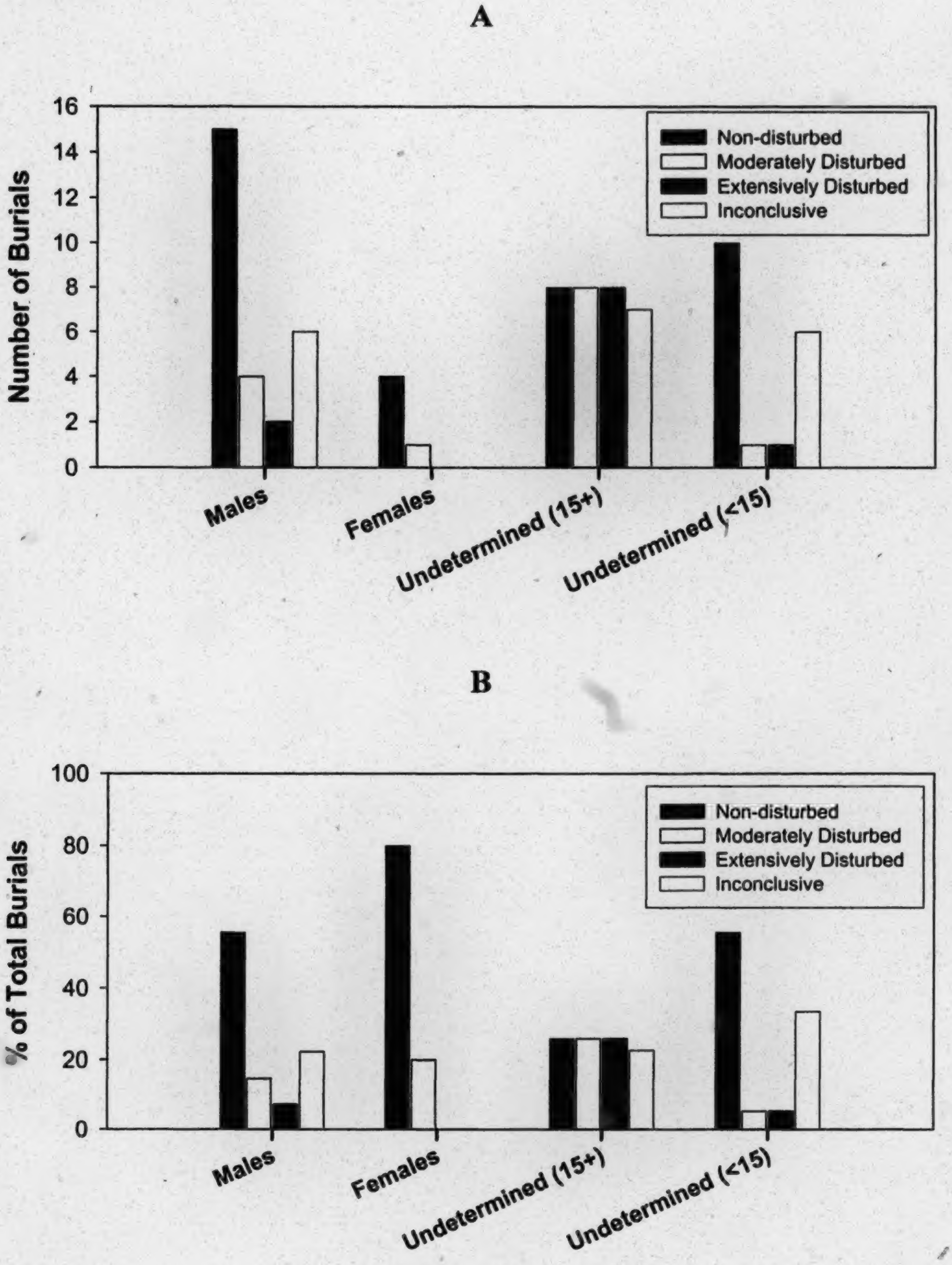
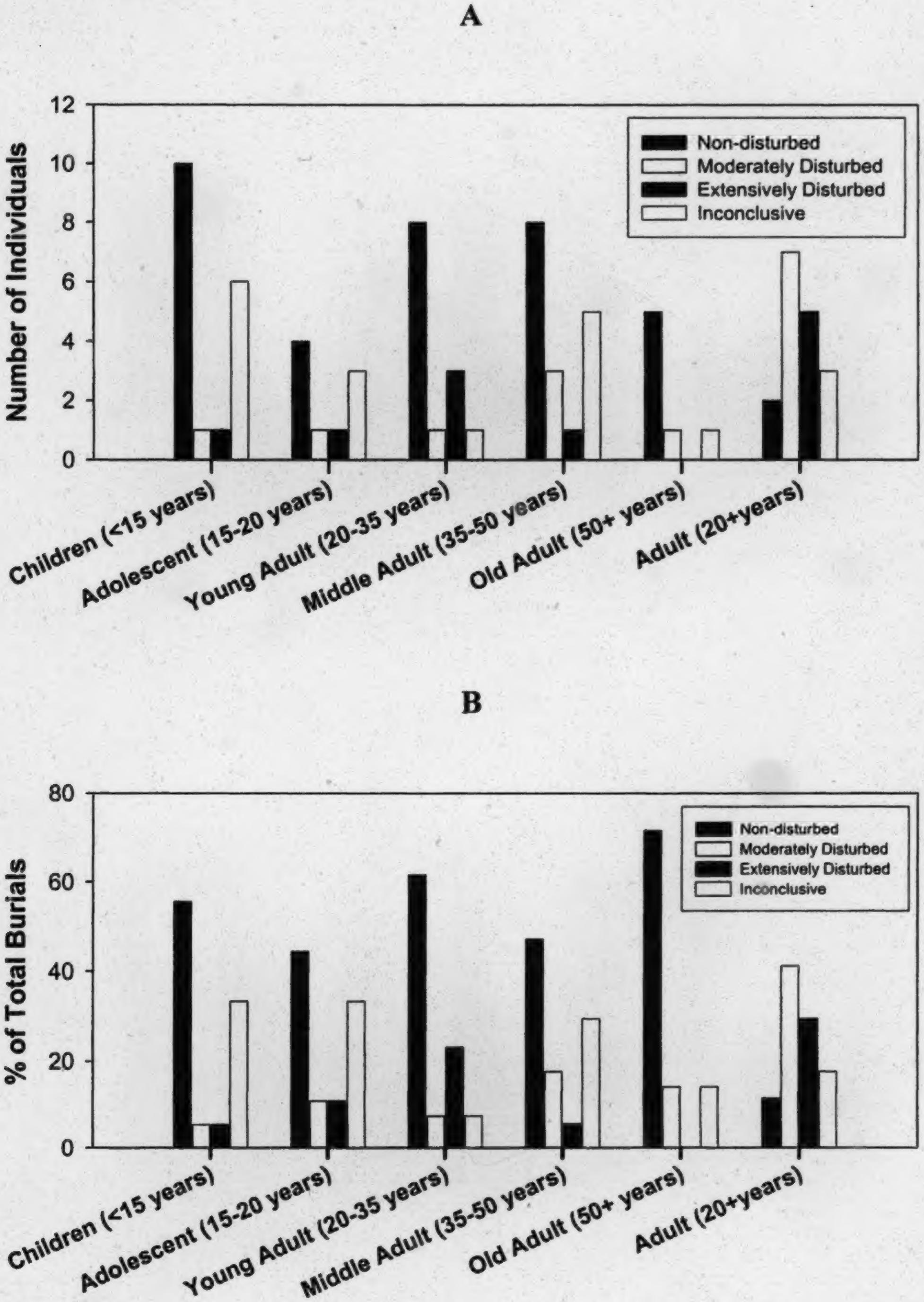


Figure 25
Grave condition at KN XIV and distribution of burials by age (see Table 14 for original data)



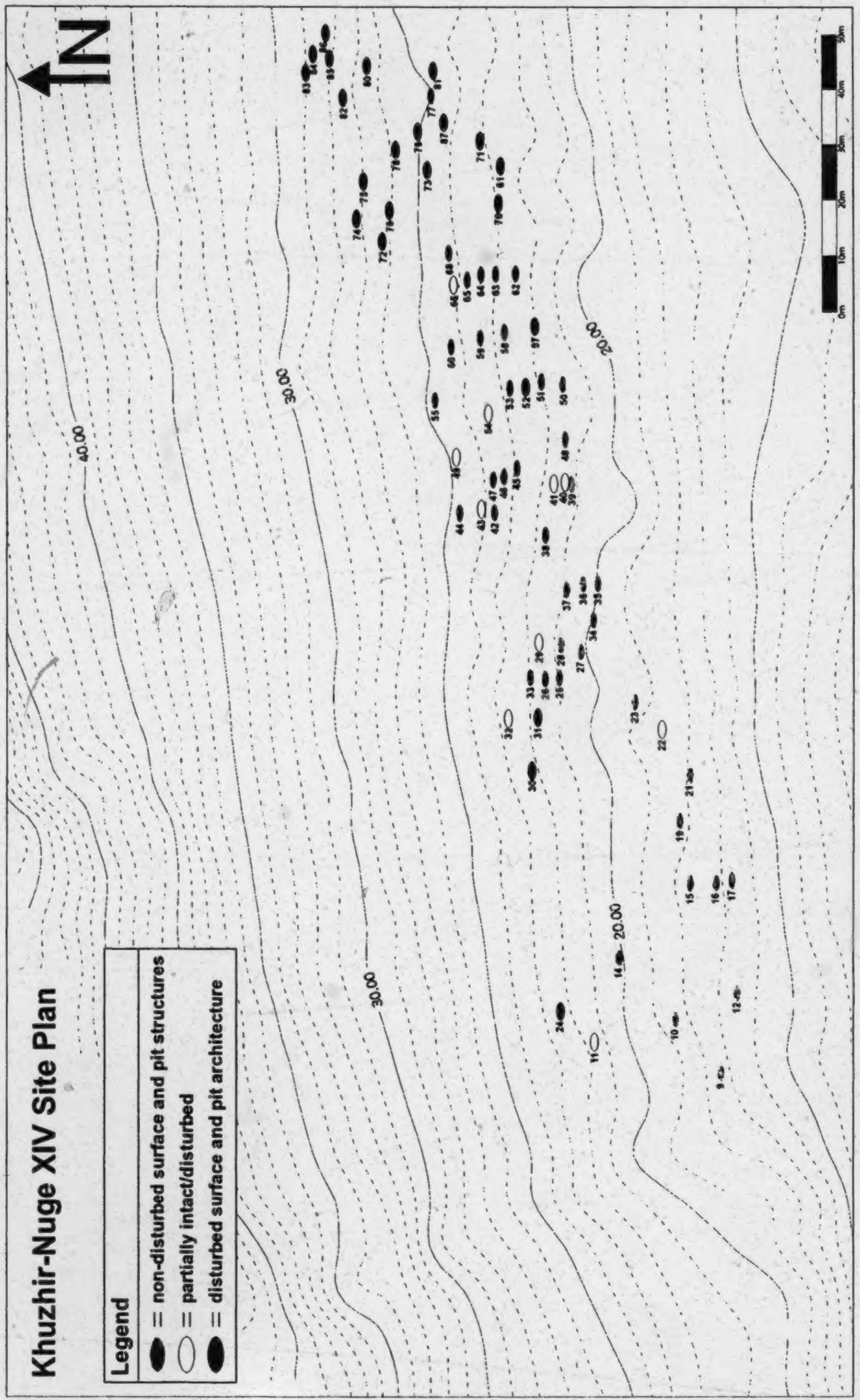

Khuzhir-Nuge XIV Site Plan
Legend
● = non-disturbed surface and pit structures
○ = partially intact/disturbed
● = disturbed surface and pit architecture
N
40.00
30.00
30.00
20.00
20.00
0m
10m
20m
30m
40m
50m

Figure 26 Spatial distribution of graves with disturbed surface and pit structures

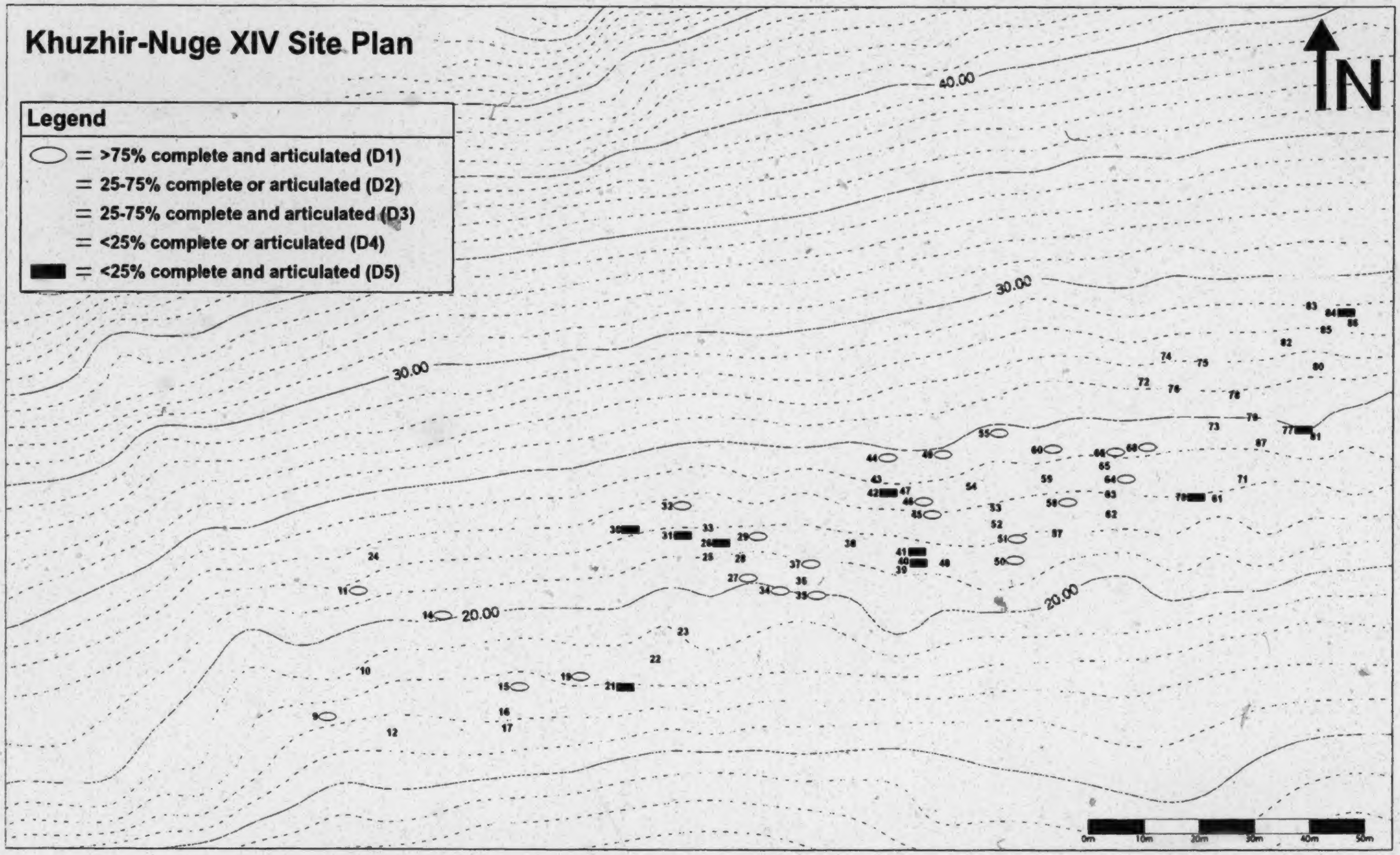

Khuzhir-Nuge XIV Site Plan
Legend
⬭ = >75% complete and articulated (D1)
= 25-75% complete or articulated (D2)
= 25-75% complete and articulated (D3)
= <25% complete or articulated (D4)
▬ = <25% complete and articulated (D5)
N
40.00
30.00
30.00
20.00
20.00
0m
10m
20m
30m
40m
50m
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Figure 27 Spatial distribution of graves at KN XIV with disturbed skeletal remains

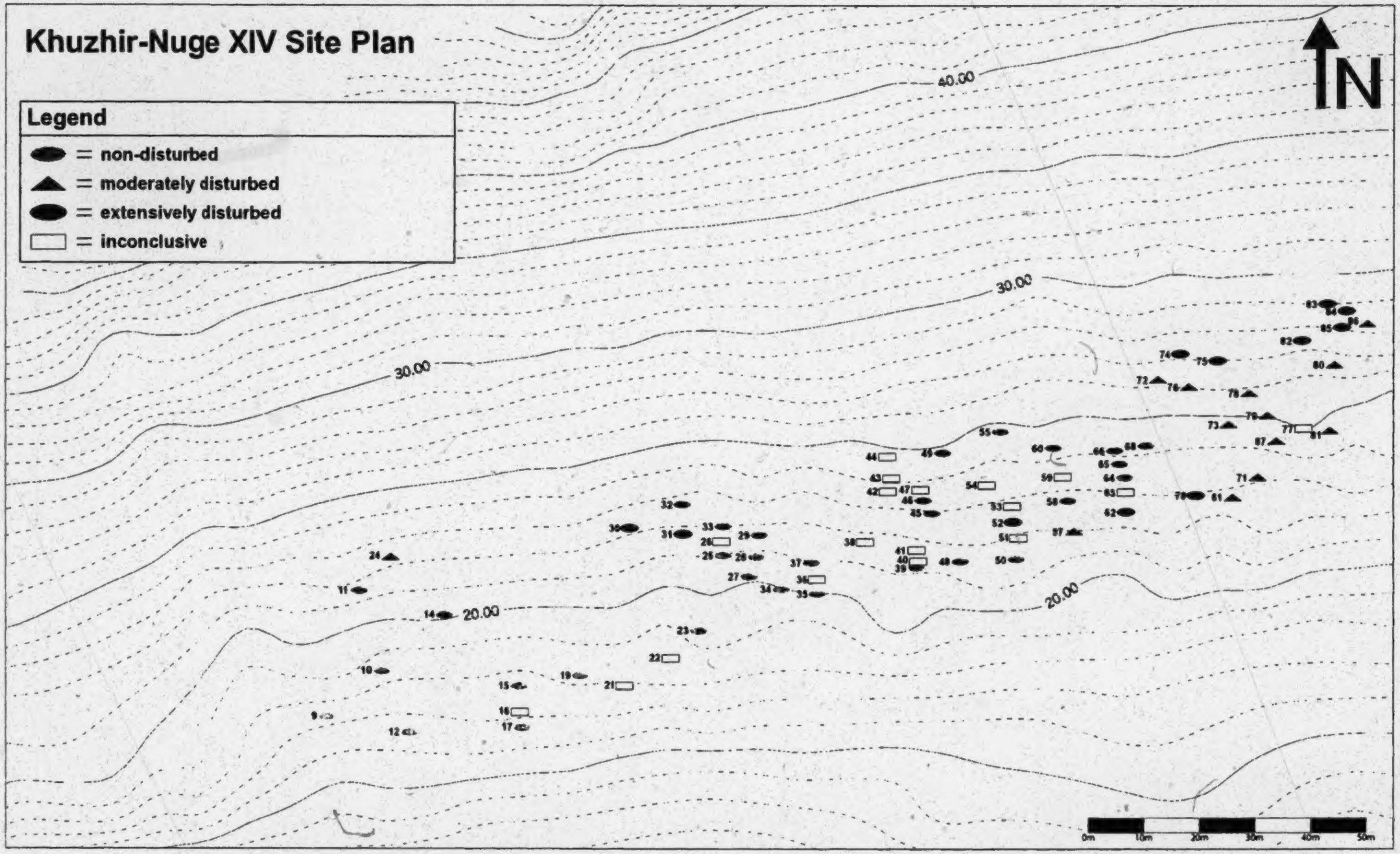
Khuzhir-Nuge XIV Site Plan
Legend
● = non-disturbed
▲ = moderately disturbed
● = extensively disturbed
☐ = inconclusive
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Figure 28 Spatial distribution of the four categories of grave condition at KN XIV

Figure 29
Volume of stones used for construction of graves at KN XIV (see Table 15 for original data)

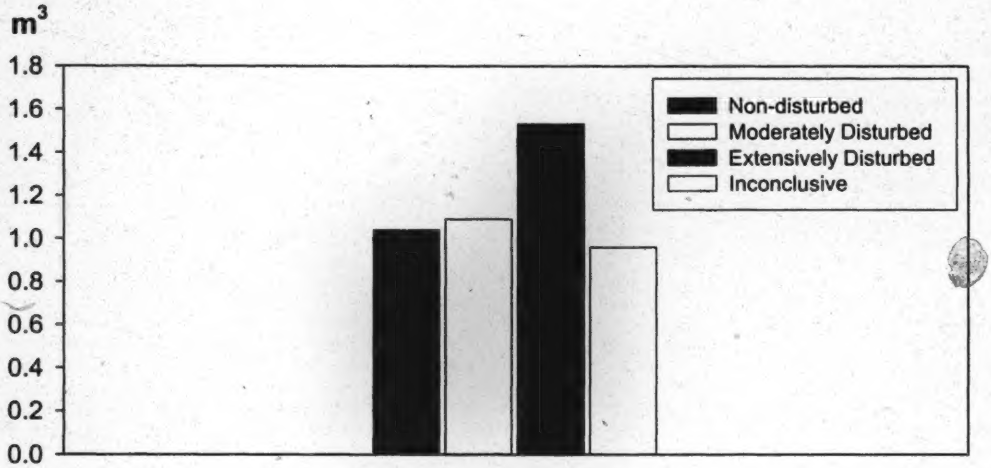

Figure 30

Grave 87. Articulated post-cranial remains and missing skull

Table 1 Architecture data

Feature	Surface structure measurements				Rock pile dimensions				Pit measurements			Stone data		
	Opening in paving	Diameter of opening (m)	Length of surface structure (m)	Width of surface structure (m)	Length (m)	Width (m)	Height (m)	Volume (m^3)	Pit length (m)	Pit width (m)	Depth of pit from modern surface (m)	Average number of stones	Average stone length (cm)	Average stone width (cm)
9	N		5.00	3.25	1.80	1.20	0.80	1.73	2.20	0.60	0.50	439	21.97	12.38
10	N		3.70	2.50	m.d.	m.d.	m.d.	m.d.	2.05	0.70	0.45	82	33.28	14.89
11	N		4.60	4.00	1.75	1.10	0.60	1.16	1.50	0.55	0.50	229	21.86	13.25
12	N		3.00	2.80	m.d.	m.d.	m.d.	m.d.	1.95	0.50	0.35	107	20.75	13.30
14	N		3.10	3.00	1.50	1.10	0.50	0.83	1.65	0.45	0.30	200	18.26	10.52
15	N		5.00	3.50	1.70	1.20	0.65	1.33	2.40	0.60	0.35	347	21.44	12.90
16	N		4.00	2.20	1.80	1.20	0.60	1.30	2.00	0.60	0.20	m.d.	m.d	m.d.
17	N		5.00	2.50	1.95	1.20	0.65	1.52	2.10	0.50	0.40	268	24.64	14.64
19	N		3.10	2.00	1.15	0.90	0.60	0.62	2.00	0.55	0.40	192	23.82	13.79
21	N		4.20	2.60	1.80	0.90	0.50	0.81	2.20	0.60	0.35	267	21.29	12.43
22	inconclusive		5.00	2.50	1.65	1.10	0.70	1.27	1.80	0.50	0.40	230	20.97	12.61
23	N		4.10	2.60	1.65	1.00	0.60	0.99	2.20	0.60	0.35	209	22.06	13.49
24	Y	1.60	3.90	2.80	1.80	0.90	0.50	0.81	1.95	0.60	0.40	151	22.59	14.01
25	N		4.00	2.40	2.00	0.80	0.60	0.96	2.10	0.60	0.50	284	22.69	12.91
26	N		4.00	2.20	1.50	0.90	0.70	0.95	1.50	0.60	0.40	159	22.01	13.45
27	N		4.40	2.00	2.50	0.90	0.65	1.46	2.50	0.85	0.45	316	25.03	13.75
28	N		4.60	2.00	2.30	1.00	0.40	0.92	2.30	0.50	0.50	299	21.61	12.85
29	N		3.60	2.40	1.90	0.90	0.45	0.77	1.85	0.60	0.30	180	20.01	11.99
30	Y	1.40	4.00	2.20	m.d.	m.d.	m.d.	m.d.	2.25	0.70	0.50	166	27.51	16.68
31	Y	3.40	6.80	5.10	2.00	1.10	0.70	1.54	1.65	0.50	0.90	230	28.64	16.08

32	N		3.60	1.80	m.d.	m.d.	m.d.	m.d.	1.80	0.60	m.d.	m.d.	m.d	m.d.
33	N		2.70	1.80	m.d.	m.d.	m.d.	m.d.	1.40	0.50	0.45	213	20.87	13.45
34	inconclusive		3.40	2.50	2.00	0.90	0.55	0.99	2.00	0.60	0.45	272	19.47	11.71
35	N		3.60	2.20	2.00	0.90	0.60	1.08	1.90	0.70	0.40	206	22.93	12.97
36	N		3.60	2.00	2.10	0.90	0.50	0.95	2.00	0.80	0.35	175	23.52	14.18
37	N		3.70	0.90	1.70	0.80	0.50	0.68	1.80	0.65	0.40	126	22.95	13.00
38	N		5.20	2.50	2.20	1.00	0.70	1.54	2.10	0.50	0.50	351	25.13	13.89
39	N		2.40	2.20	1.40	0.70	0.40	0.39	1.40	0.50	0.40	98	20.73	12.78
40	N		1.90	1.00	1.20	0.60	0.50	0.36	0.95	0.40	0.30	60	23.16	12.96
41	inconclusive		3.60	2.00	1.80	0.70	0.50	0.63	1.60	0.50	0.40	117	22.82	13.03
42	N		5.00	2.00	2.30	0.80	0.40	0.74	2.00	0.60	0.50	234	20.18	11.75
43	N		4.60	2.10	2.45	0.80	0.50	0.98	2.45	0.80	0.45	292	22.70	13.74
44	N		4.90	2.40	2.55	0.80	0.60	1.22	2.40	0.60	0.45	425	21.43	12.35
45	N		3.60	1.80	1.90	0.90	0.70	1.20	1.70	0.50	0.50	220	24.14	13.72
46	N		4.00	1.80	2.25	0.75	0.50	0.84	2.25	0.50	0.50	162	26.45	15.09
47	N		2.70	1.75	1.30	0.65	0.30	0.25	1.30	0.45	0.30	126	17.68	10.68
48	N		4.00	1.25	2.00	0.80	0.30	0.48	1.40	0.40	0.30	139	21.40	13.44
49	N		4.20	3.60	2.50	0.70	0.40	0.70	2.00	0.60	0.50	281	19.44	12.18
50	N		4.40	2.20	2.70	0.70	0.50	0.95	2.50	0.70	0.40	237	21.87	11.92
51	N		4.60	3.00	2.50	1.00	0.50	1.25	2.40	0.70	0.40	261	25.54	14.24
52	Y	1.80	5.20	2.80	2.60	0.80	0.40	0.83	2.30	0.80	0.40	289	21.55	11.76
53	N		4.60	1.60	2.25	0.85	0.60	1.15	2.25	0.85	0.40	305	18.66	11.08
54	inconclusive		3.60	3.60	2.10	0.80	0.40	0.67	2.30	0.70	0.40	300	18.69	10.88
55	N		3.70	1.65	2.00	0.80	0.60	0.96	2.00	0.50	0.45	270	20.34	10.29
57	Y	4.00	6.00	4.50	2.60	1.10	0.60	1.72	2.50	0.90	0.30	345	24.09	12.66
58	N		4.40	3.20	3.10	1.25	0.80	3.10	3.10	0.60	0.65	333	28.00	16.65
59	N		4.40	2.80	2.35	0.90	0.70	1.48	2.54	0.50	0.50	216	26.39	15.39
60	N		3.60	2.40	2.30	0.75	0.60	1.04	2.00	0.50	0.45	241	22.92	13.02
61	Y	2.20	5.20	4.20	2.05	0.70	0.45	0.65	1.90	0.75	0.45	139	28.71	16.32

62	Y	2.40	4.80	4.00	2.60	0.80	0.50	1.04	2.70	0.90	0.50	410	23.03	14.01
63	N		4.80	3.20	2.60	0.95	0.55	1.36	2.30	0.50	0.50	382	21.23	13.00
64	N		4.50	2.80	2.20	0.95	0.65	1.36	1.80	0.60	0.50	213	23.47	13.51
65	N		3.70	2.00	1.55	0.80	0.50	0.62	1.20	0.40	0.45	211	20.81	12.04
66	N		4.60	3.10	2.10	0.85	0.55	0.98	2.00	0.50	0.40	316	20.35	11.65
68	N		4.50	2.60	2.30	0.80	0.65	1.20	2.20	0.50	0.45	260	22.21	13.01
70	Y	3.60	6.20	6.00	3.00	1.05	0.60	1.89	3.10	1.50	0.40	337	28.29	14.91
71	Y	2.60	5.40	4.60	2.35	0.85	0.45	0.90	1.80	0.75	0.30	257	25.21	15.78
72	Y	2.00	6.20	6.00	2.80	1.10	0.85	2.62	2.30	0.70	0.50	278	33.91	18.57
73	Y	3.00	6.20	4.40	2.00	0.85	0.40	0.68	1.70	0.60	0.45	211	29.16	18.78
74	Y	2.00	7.40	6.40	3.70	1.00	0.85	3.15	3.10	0.70	0.50	354	34.40	19.65
75	Y	3.00	7.00	6.40	3.00	1.20	0.80	2.88	1.95	0.85	0.50	354	28.34	16.41
76	Y	3.20	7.40	6.00	2.30	1.10	0.85	2.15	2.20	0.75	0.60	257	32.52	18.62
77	inconclusive		3.00	3.00	2.10	0.90	0.55	1.04	1.50	0.70	0.55	186	25.59	13.89
78	Y	2.80	5.20	2.40	2.15	0.80	0.60	1.03	2.20	0.60	0.60	118	33.57	20.83
79	Y	3.00	6.00	4.00	2.15	0.80	0.55	0.95	1.90	0.55	0.35	147	34.01	18.85
80	inconclusive		6.60	4.80	2.20	0.80	0.45	0.79	1.90	0.60	0.45	143	32.24	17.84
81	Y		5.60	5.00	2.20	1.00	0.45	0.99	2.10	0.60	0.35	281	21.99	12.84
82	Y	4.00	6.80	6.20	2.10	0.90	0.65	1.23	1.75	0.65	0.50	340	24.93	13.42
83	Y	3.00	6.40	5.00	2.30	0.90	0.60	1.24	1.90	0.50	0.45	210	28.47	14.68
84	Y	2.60	6.80	3.00	2.00	0.90	0.45	0.81	2.00	0.80	0.45	198	24.40	13.43
85	Y	3.50	6.20	5.00	1.95	0.90	0.70	1.23	2.20	0.70	0.50	308	23.39	12.93
86	Y	3.00	5.60	4.70	1.90	1.05	0.65	1.30	2.00	0.70	0.45	321	22.96	12.33
87	inconclusive		7.40	6.00	1.70	0.75	0.30	0.38	2.00	0.80	0.30	91	25.61	14.43
Average		**2.77**	**4.65**	**3.13**	**2.12**	**0.91**	**0.57**	**1.14**	**2.03**	**0.63**	**0.44**	**239**	**24.12**	**13.89**

Opening in Paving: Y= present, N = not present

m.d. = missing data

n/a = not applicable

Table 2 Burial data

Feature	Burial No.	Sex	Age	Completeness of Skeletal Remains	Burial Affected by Fire	Condition
9		M	50+	> 75%	Y	non-disturbed
10		?	20 - 25	25% - 75%	N	non-disturbed
11		M	35 - 50	> 75%	N	non-disturbed
12		?	25 - 35	25% - 75%	N	non-disturbed
14		pM	35 - 50	> 75%	N	non-disturbed
15		M	25 - 35	> 75%	N	non-disturbed
16		?	7 - 9	25% - 75%	N	inconclusive
17		?	5 - 7	< 25%	N	non-disturbed
19		F	35 - 50	25% - 75%	N	non-disturbed
21		?	20+	< 25%	N	inconclusive
22		?	20+	25% - 75%	N	inconclusive
23		?	20+	25% - 75%	N	non-disturbed
24		?	20+	25% - 75%	Y	moderately disturbed
25		pM	35 - 50	25% - 75%	Y	non-disturbed
26		?	4 - 6	< 25%	N	inconclusive
27	B 27.1	M	35 - 50	> 75%	N	non-disturbed
	B 27.2	?	9 - 11	25% - 75%		
	B 27.3	?	4 - 6	25% - 75%		
28		pF	20+	25% - 75%	Y	non-disturbed
29		M	50+	> 75%	Y	non-disturbed
30		?	?	< 25%	N	extensively disturbed
31		?	20+	< 25%	N	extensively disturbed
32		F	50+	> 75%	N	non-disturbed
33		?	3 - 5	< 25%	N	non-disturbed
34		M	25 - 35	> 75%	Y	non-disturbed
35	B 35.1	pM	18 - 20	> 75%	N	non-disturbed
	B 35.2	?	8 - 10	> 75%		
36	B 36.1	?	35 - 50	25% - 75%		inconclusive
	B 36.2	?	4 - 6	< 25%	Y	
37	B 37.1	?	14 - 17	> 75%	Y	non-disturbed
	B 37.2	?	14 - 17	> 75%		
	B 37.3	?	Neonate	< 25%		
38		M	35 - 50	> 75%	Y	inconclusive
39		?	9 - 11	25% - 75%	N	non-disturbed
40		?	2 - 3	< 25%	N	inconclusive
41		?	?	< 25%	Y	inconclusive

42		?	50+	< 25%	N	inconclusive
43		M	25 - 35	25% - 75%	Y	inconclusive
44		M	35 - 50	> 75%	N	inconclusive
45		?	8 - 10	> 75%	N	non-disturbed
46		M	25 - 35	> 75%	N	non-disturbed
47		?	3 - 4	> 75%	N	inconclusive
48		?	7 - 9	< 25%	N	non-disturbed
49		?	50+	> 75%	N	non-disturbed
50		?	15 - 18	> 75%	N	non-disturbed
51		M	18 - 20	> 75%	N	inconclusive
52		?	25 - 35	< 25%	Y	extensively disturbed
53		M	35 - 50	> 75%	N	inconclusive
54		?	20+	< 25%	Y	inconclusive
55		pM	35 - 50	> 75%	N	non-disturbed
57	**B 57.1**	F	18 - 20	25% - 75%	Y	moderately disturbed
	B 57.2	pM	35 - 50	< 25%		
58	**B 58.1**	?	25 - 35	> 75%	N	non-disturbed
	B 58.2	pM	35 - 50	> 75%		
59	**B 59.1**	?	35 - 50	< 25%	N	inconclusive
	B 59.2	M	18 - 20	> 75%		
60		pF	50+	> 75%	N	non-disturbed
61		?	20+	25% - 75%	N	moderately disturbed
62	**B 62.1**	M	20+	25% - 75%	Y	extensively disturbed
	B 62.2	?	8 - 10	25% - 75%		
63		?	16 - 18	> 75%	N	inconclusive
64		M	25 - 35	> 75%	N	non-disturbed
65		?	5 - 6	< 25%	Y	non-disturbed
66		M	35 - 50	> 75%	Y	non-disturbed
68		pM	25 - 35	> 75%	N	non-disturbed
70		?	35 - 50	< 25%	N	extensively disturbed
71		?	12 - 15	> 75%	N	moderately disturbed
72		?	20+	> 75%	N	moderately disturbed
73		?	20+	> 75%	N	moderately disturbed
74		M	25 - 35	< 25%	N	extensively disturbed
75		?	20+	< 25%	N	extensively disturbed
76		?	20+	25% - 75%	N	moderately disturbed
77		?	12 - 15	< 25%	N	inconclusive
78		?	20+	25% - 75%	N	moderately disturbed
79		?	20+	25% - 75%	N	moderately disturbed
80	**B 80.1**	?	?	< 25%	N	moderately disturbed
	B 80.2	M	50+	25% - 75%		
81		pM	35 - 50	25% - 75%	N	moderately disturbed
82		?	20 - 25	< 25%	Y	extensively disturbed

83		?	20+	< 25%	N	extensively disturbed
84		?	13 - 19	< 25%	N	extensively disturbed
85		?	20+	< 25%	N	extensively disturbed
86		?	20 - 25	25% - 75%	N	moderately disturbed
87		pM	35 - 50	> 75%	N	moderately disturbed

M= Male
F= Female
pM = probable male
pF = probable female
? = inconclusive

Table 3

Grave inclusions

	Ornaments		Implements		Unworked Animal		Raw Material		Pottery		Totals	
Frequency	**assoc.**	**all**	**assoc.**	**all**	**assoc.**	**all**	**assoc.**	**all**	**assoc.**	**all**	**assoc.**	**all**
Non-disturbed	3059	3059	28	40	25	47	24	45	19	74	3155	3265
Moderately disturbed	489	489	67	76	1	8	0	5	0	5	557	583
Extensively disturbed	51	52	123	155	36	40	1	5	0	95	211	347
Inconclusive	1748	1748	4	7	4	4	0	4	3	167	1759	1930
Totals	5347	5348	222	278	66	99	25	59	22	341	5682	6125
Row %												
Non-disturbed	97.0%	93.7%	0.9%	1.2%	0.8%	1.4%	0.8%	1.4%	0.6%	2.3%	100.0%	100.0%
Moderately disturbed	87.8%	83.9%	12.0%	13.0%	0.2%	1.4%	0.0%	0.9%	0.0%	0.9%	100.0%	100.0%
Extensively disturbed	24.2%	15.0%	58.3%	44.7%	17.1%	11.5%	0.5%	1.4%	0.0%	27.4%	100.0%	100.0%
Inconclusive	99.4%	90.6%	0.2%	0.4%	0.2%	0.2%	0.0%	0.2%	0.2%	8.7%	100.0%	100.0%
Totals	94.1%	87.3%	3.9%	4.5%	1.2%	1.6%	0.4%	1.0%	0.4%	5.6%	100.0%	100.0%
Column %												
Non-disturbed	57.2%	57.2%	12.6%	14.4%	37.9%	47.5%	96.0%	76.3%	86.4%	21.7%	55.5%	53.3%
Moderately disturbed	9.1%	9.1%	30.2%	27.3%	1.5%	8.1%	0.0%	8.5%	0.0%	1.5%	9.8%	9.5%
Extensively disturbed	1.0%	1.0%	55.4%	55.8%	54.5%	40.4%	4.0%	8.5%	0.0%	27.9%	3.7%	5.7%
Inconclusive	32.7%	32.7%	1.8%	2.5%	6.1%	4.0%	0.0%	6.8%	13.6%	49.0%	31.0%	31.5%
Totals	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 4 Condition of Grave Architecture

		Surface Structure		
Pit Structure		**Intact**	**Partially-Intact/ Disturbed**	**Disturbed**
	Intact	**(R1)** 9, 10, 12, 14, 15, 16, 17, 19, 21, 23, 25, 26, 27, 28, 33, 34, 35, 36, 37, 38, 39, 42, 44, 45, 46, 47, 48, 50, 51, 53, 55, 58, 59, 60, 63, 64, 65, 68, 77	**(R2)** 11, 22, 29, 49, 54, 66	**(R3)**
	Partially-Intact/ Disturbed	**(R2)** 32, 43	**(R3)** 40, 41	**(R4)** 62
	Disturbed	**(R3)**	**(R4)**	**(R5)** 24, 30, 31, 52, 57, 61, 70, 71, 72, 73, 74, 75, 76, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87

Table 5 Burial Condition

	Completeness			
Anatomical Position		>75%	25-75%	<25%
	>75%	**(D1)** 9, 11, 14, 15, 19, 27.1, 27.2, 27.3, 29, 32, 34, 35.1, 35.2, 37.1, 37.2, 44, 45, 46, 49, 50, 51, 55, 58.1, 58.2, 60, 64, 66, 68	**(D2)** 10, 12, 22, 23, 24, 39, 48, 61, 71, 72, 73, 86, 87	**(D3)** 17, 33, 54, 65,
	25-75%	**(D2)** 38, 43, 53, 57.1, 57.2, 59.2*, 63	**(D3)** 16, 76, 78, 79, 80.2*, 81	**(D4)** 25, 52, 74, 75, 80.1, 82, 83, 85
	<25%	**(D3)** 47	**(D4)** 28, 36.1, 36.2, 62.1, 62.2	**(D5)** 21, 26, 30, 31, 40, 41, 42, 59.1, 70, 77, 84

* Individuals from the same grave are separated on this table if they exhibit different characteristics. On Table 6 they are categorized according to the completeness and degree of articulation of the more complete individual (marked by an asterisk on this table).

Table 6 Grave and Burial Condition

		Skeletal Remains (←more complete and articulated)				
		D1	D2	D3	D4	D5
Architecture (more intact →)	R1	9, 14, 15, 19, 27, 34, 35, 37, ***44,*** 45, 46, 50, ***51,*** 55, 58, 60, 64, 68	10, 12, 23, ***38,*** 39, 48, ***53,*** ***59,*** ***63***	***16,*** 17, 33, ***47,*** 65	25, 28, ***36,***	***21,*** ***26,*** ***42,*** ***77***
	R2	11, 29, 32, 49, 66	***22,*** ***43***	***54***		
	R3					***40,*** ***41***
	R4				62	
	R5		24, 57, 61, 71, 72, 73, 86, 87	76, 78, 79, 80, 81	52, 74, 75, 82, 83, 85	30, 31, 70, 84

Legend

Non-disturbed ————

Moderately Disturbed — · — · —

Extensively Disturbed ··············

Inconclusive ***#***

Table 7 Categories of Grave Condition at Khuzhir-Nuge

	Number of graves	%
Non-disturbed	31	42.47%
Moderately disturbed	13	17.81%
Extensively disturbed	11	15.07%
Inconclusive	18	24.66%
Totals	73	100.00%

Table 8 Ornaments

	Kaolinite beads	Bone/antler beads	Red deer canine pendants	Copper/ bronze rings	Ground stone rings	Ground stone discs	Totals
Frequency							
Non-disturbed	2974	4	68	2	1	10	3059
Moderately disturbed	458	7	18	1	1	4	489
Extensively disturbed	38	0	8	1	0	5	52
Inconclusive	1701	8	31	0	1	7	1748
Totals	5171	19	125	4	3	26	5348
Row %							
Non-disturbed	97.2%	0.1%	2.2%	0.1%	0.0%	0.3%	100.0%
Moderately disturbed	93.7%	1.4%	3.7%	0.2%	0.2%	0.8%	100.0%
Extensively disturbed	73.1%	0.0%	15.4%	1.9%	0.0%	9.6%	100.0%
Inconclusive	97.3%	0.5%	1.8%	0.0%	0.1%	0.4%	100.0%
Totals	96.7%	0.4%	2.3%	0.1%	0.1%	0.5%	100.0%
Column %							
Non-disturbed	57.5%	21.1%	54.4%	50.0%	33.3%	38.5%	57.2%
Moderately disturbed	8.9%	36.8%	14.4%	25.0%	33.3%	15.4%	9.1%
Extensively disturbed	0.7%	0.0%	6.4%	25.0%	0.0%	19.2%	1.0%
Inconclusive	32.9%	42.1%	24.8%	0.0%	33.3%	26.9%	32.7%
Totals	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 9 Flaked stone implements

	Arrowheads		Bifaces		Scrapers		Blades		Flakes		Inserts		Totals	
Frequency	**assoc.**	**all**	**assoc.**	**all**	**assoc.**	**all**	**assoc.**	**all**	**assoc.**	**all**	**assoc.**	**all**	**assoc.**	**all**
Non-disturbed	6	6	1	1	1	1	2	2	10	18	0	0	20	28
Moderately disturbed	25	28	8	9	5	6	3	5	5	6	0	0	46	54
Extensively disturbed	26	37	3	8	4	4	13	15	16	22	22	24	84	110
Inconclusive	2	2	0	0	1	1	0	1	1	3	0	0	4	7
Totals	59	73	12	18	11	12	18	23	32	49	22	24	154	199
Row %														
Non-disturbed	30.0%	21.4%	5.0%	3.6%	5.0%	3.6%	10.0%	7.1%	50.0%	64.3%	0.0%	0.0%	100.0%	100.0%
Moderately disturbed	54.3%	51.9%	17.4%	16.7%	10.9%	11.1%	6.5%	9.3%	10.9%	11.1%	0.0%	0.0%	100.0%	100.0%
Extensively disturbed	31.0%	33.6%	3.6%	7.3%	4.8%	3.6%	15.5%	13.6%	19.0%	20.0%	26.2%	21.8%	100.0%	100.0%
Inconclusive	50.0%	28.6%	0.0%	0.0%	25.0%	14.3%	0.0%	14.3%	25.0%	42.9%	0.0%	0.0%	100.0%	100.0%
Totals	38.3%	36.7%	7.8%	9.0%	7.1%	6.0%	11.7%	11.6%	20.8%	24.6%	14.3%	12.1%	100.0%	100.0%
Column %														
Non-disturbed	10.2%	8.2%	8.3%	5.6%	9.1%	8.3%	11.1%	8.7%	31.3%	36.7%	0.0%	0.0%	13.0%	14.1%
Moderately disturbed	42.4%	38.4%	66.7%	50.0%	45.5%	50.0%	16.7%	21.7%	15.6%	12.2%	0.0%	0.0%	29.9%	27.1%
Extensively disturbed	44.1%	50.7%	25.0%	44.4%	36.4%	33.3%	72.2%	65.2%	50.0%	44.9%	100.0%	100.0%	54.5%	55.3%
Inconclusive	3.4%	2.7%	0.0%	0.0%	9.1%	8.3%	0.0%	4.3%	3.1%	6.1%	0.0%	0.0%	2.6%	3.5%
Totals	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 10 Ground stone implements

	Adzes		Knives		Abraders		Totals	
Frequency	assoc.	all	assoc.	all	assoc.	all	assoc.	all
Non-disturbed	1	1	1	1	1	2	3	4
Moderately disturbed	3	3	3	4	5	5	11	12
Extensively disturbed	3	4	0	0	1	3	4	7
Inconclusive	0	0	0	0	0	0	0	0
Totals	7	8	4	5	7	10	18	23
Row %								
Non-disturbed	33.3%	25.0%	33.3%	25.0%	33.3%	50.0%	100.0%	100.0%
Moderately disturbed	27.3%	25.0%	27.3%	33.3%	45.5%	41.7%	100.0%	100.0%
Extensively disturbed	75.0%	57.1%	0.0%	0.0%	25.0%	42.9%	100.0%	100.0%
Inconclusive	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Totals	38.9%	34.8%	22.2%	21.7%	38.9%	43.5%	100.0%	100.0%
Column %								
Non-disturbed	14.3%	12.5%	25.0%	20.0%	14.3%	20.0%	16.7%	17.4%
Moderately disturbed	42.9%	37.5%	75.0%	80.0%	71.4%	50.0%	61.1%	52.2%
Extensively disturbed	42.9%	50.0%	0.0%	0.0%	14.3%	30.0%	22.2%	30.4%
Inconclusive	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Totals	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 11 Organic Implements

	Points		Spoons		Harpoons		Fleshers		Fishhook Shanks		Totals	
Frequency	**assoc.**	**all**	**assoc.**	**all**	**assoc.**	**all**	**assoc.**	**all**	**assoc.**	**all**	**assoc.**	**all**
Non-disturbed	2	2	0	0	0	0	2	2	0	0	4	4
Moderately disturbed	3	3	2	2	1	1	1	1	0	0	7	7
Extensively disturbed	5	5	2	2	1	1	3	4	20	20	31	32
Inconclusive	0	0	0	0	0	0	0	0	0	0	0	0
Totals	10	10	4	4	2	2	6	7	20	20	42	43
Row %												
Non-disturbed	50.0%	50.0%	0.0%	0.0%	0.0%	0.0%	50.0%	50.0%	0.0%	0.0%	100.0%	100.0%
Moderately disturbed	42.9%	42.9%	28.6%	28.6%	14.3%	14.3%	14.3%	14.3%	0.0%	0.0%	100.0%	100.0%
Extensively disturbed	16.1%	15.6%	6.5%	6.3%	3.2%	3.1%	9.7%	12.5%	64.5%	62.5%	100.0%	100.0%
Inconclusive	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Totals	23.8%	23.3%	9.5%	9.3%	4.8%	4.7%	14.3%	16.3%	47.6%	46.5%	100.0%	100.0%
Column %												
Non-disturbed	20.0%	20.0%	0.0%	0.0%	0.0%	0.0%	33.3%	28.6%	0.0%	0.0%	9.5%	9.3%
Moderately disturbed	30.0%	30.0%	50.0%	50.0%	50.0%	50.0%	16.7%	14.3%	0.0%	0.0%	16.7%	16.3%
Extensively disturbed	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	57.1%	100.0%	100.0%	73.8%	74.4%
Inconclusive	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Totals	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 12 Pottery fragments

	Fragments	
Frequency	**assoc.**	**all**
Non-disturbed	19	74
Moderately disturbed	0	5
Extensively disturbed	0	95
Inconclusive	3	167
Totals	22	341
Column %		
Non-disturbed	86.36%	21.70%
Moderately disturbed	0.00%	1.47%
Extensively disturbed	0.00%	27.86%
Inconclusive	13.64%	48.97%
Totals	100.00%	100.00%

Table 13 Sex of individual and grave condition

	Males*	Females*	Undetermined adults (15+ years)	Undetermined subadults (<15 years)	Total individuals	Total graves
Non-disturbed	15	4	8	10	37	31
Moderately disturbed	4	1	8	1	14	13
Extensively disturbed	2	0	8	1	11	11
Inconclusive	6	0	7	6	19	18
Totals	27	5	31	18	81	73
Row %						
Non-disturbed	40.5%	10.8%	21.6%	27.0%	100.0%	n/a
Moderately disturbed	28.6%	7.1%	57.1%	7.1%	100.0%	n/a
Extensively disturbed	18.2%	0.0%	72.7%	9.1%	100.0%	n/a
Inconclusive	31.6%	0.0%	36.8%	31.6%	100.0%	n/a
Totals	33.3%	6.2%	38.3%	22.2%	100.0%	n/a
Column %						
Non-disturbed	55.6%	80.0%	25.8%	55.6%	45.7%	42.5%
Moderately disturbed	14.8%	20.0%	25.8%	5.6%	17.3%	17.8%
Extensively disturbed	7.4%	0.0%	25.8%	5.6%	13.6%	15.1%
Inconclusive	22.2%	0.0%	22.6%	33.3%	23.5%	24.7%
Totals	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 14 Age of individual at death and grave condition

	Children (<15 years)	Adolescent (15-20 years)	Young Adult (20-35 years)	Middle Adult (35-50 years)	Old Adult (50+ years)	Adult (20+years)	Totals
Frequency							
Non-disturbed	10	4	8	8	5	2	37
Moderately disturbed	1	1	1	3	1	7	14
Extensively disturbed	1	1	3	1	0	5	11
Inconclusive	6	3	1	5	1	3	19
Totals	18	9	13	17	7	17	81
Row %							
Non-disturbed	27.0%	10.8%	21.6%	21.6%	13.5%	5.4%	100.0%
Moderately disturbed	7.1%	7.1%	7.1%	21.4%	7.1%	50.0%	100.0%
Extensively disturbed	9.1%	9.1%	27.3%	9.1%	0.0%	45.5%	100.0%
Inconclusive	31.6%	15.8%	5.3%	26.3%	5.3%	15.8%	100.0%
Totals	22.2%	11.1%	16.0%	21.0%	8.6%	21.0%	100.0%
Column %							
Non-disturbed	55.6%	44.4%	61.5%	47.1%	71.4%	11.8%	45.7%
Moderately disturbed	5.6%	11.1%	7.7%	17.6%	14.3%	41.2%	17.3%
Extensively disturbed	5.6%	11.1%	23.1%	5.9%	0.0%	29.4%	13.6%
Inconclusive	33.3%	33.3%	7.7%	29.4%	14.3%	17.6%	23.5%
Totals	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 15 Grave stone volume

	Average cairn length (m)	Average cairn width (m)	Average cairn height (m)	Average volume (m^3)
Non-disturbed	2.01	0.91	0.57	1.04
Moderately disturbed	2.17	0.91	0.55	1.09
Extensively disturbed	2.53	0.96	0.63	1.53
Inconclusive	2.03	0.88	0.54	0.96
Average	**2.19**	**0.92**	**0.57**	**1.16**

Table 16 Sex and age data for burials with absent, partially absent, or displaced heads

	Males*	Females*	Undetermined adults (15+ years)	Undetermined subadults (<15 years)	Undetermined Sex and Age	Total individuals
Completely missing skull	2	0	13	2	1	18
Cranium or mandible absent	2	0	2	1	0	5
Skull moved from anatomical position	3	0	0	1	0	4
Totals	7	0	15	4	1	27
Row %						
Completely missing skull	11.1%	0.0%	72.2%	11.1%	5.6%	100.0%
Cranium or mandible absent	40.0%	0.0%	40.0%	20.0%	0.0%	100.0%
Skull moved from anatomical position	75.0%	0.0%	0.0%	25.0%	0.0%	100.0%
Totals	25.9%	0.0%	55.6%	14.8%	3.7%	100.0%

*** Includes probable males and probable females**

Table 17 Age at death data for burials with absent, partially absent, or displaced heads

	Children (<15 years)	Adolescent (16-20 years)	Young Adult (20-35 years)	Middle Adult (35-50 years)	Old Adult (50+ years)	Adult (20+years)	Inconclusive	Totals
Frequency								
Completely missing skull	2	1	2	2	0	10	1	18
Cranium or mandible absent	1	0	1	1	1	1	0	5
Skull moved from anatomical position	1	1	0	2	0	0	0	4
Totals	4	2	3	5	1	11	1	27
Row %								
Completely missing skull	11.1%	5.6%	11.1%	11.1%	0.0%	55.6%	5.6%	100.0%
Cranium or mandible absent	20.0%	0.0%	20.0%	20.0%	20.0%	20.0%	0.0%	100.0%
Skull moved from anatomical position	25.0%	25.0%	0.0%	50.0%	0.0%	0.0%	0.0%	100.0%
Totals	14.8%	7.4%	11.1%	18.5%	3.7%	40.7%	3.7%	100.0%

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